Ʊȷ ʔȺƱĦɆɇ¢ ʐ ĦɃ Ħqȷ ʔʔĦʔq ʔ

Ħȷ ɇɅɆȚ¢ Ɇj Ƀş ¢

ʐ ɃɅūɃş OũĦȚɃɆ-Ţş ĦʔĦȚɃȺɅũȷ Ɇɇ¢ ɅĦȷ ŢɃɆɇɃʐ ȺȷɆ

ȺɅũȷ Ɇɇ¢ ɅĦɃ Ʊȷ ŪɃş ɃũĦȚ¢ Ɇ ȷ ʔȷ ɇɃʐ Ħȷ Ɇ

ʐ ɃɅĦȷ Ţ¢ ȷ ʔĦj ʔȺJɆ¢ ƐȺȷ Ʌj ȺĦȷ ŢɃ Jş ĦȚɃ ȷ ʔŪȺŢɇĦȚqʔ Ɇɇ ĦƐ
ʐ ȷ ŢɅɃş ĦqpȺƐ Ɇɇ Ⱥş Ⱥj qʔ Ⱥş ĦȚɃdȷ Ţɇ¢ ɅĦqĦɃJ ɇɃJ ƱJş qɅɃJ Ţȷ Ł
ƐJ Ɇj Ⱥɇ ĦƐʐ ɃƐ
ʐ Ⱥ ĦƐɇɃş ɃũĦȚȷ qpȺqɃʐ Ⱥʔȷ ɇȷ ɔ ĦʔɃʐ ¢ Ɇ¢ Ɇ Ţȷ ɇȷ SYDNEY

ũȷ Ȼ¢ ƐɃūĦȷ

dbĦBş BũBƐ

qĦqȷ ŢɇɃɅĦȚ¢ qĦȷ ɇɅĦb¢

Ħqȷ ʔʔĦȷ 2012

«¢ ÿɔəʃɣəůɖ Ű[ɡ ŭɘűŬəŰɛʃɣəəɐɡ ŭɘŮŰʃɣəbɐɡ Ŭ ɦ Ű[ɜ ĦŮŰʃɣəɐ Ɇɕɢəɐɐ Ű£g ĦŬɜŮ ɣəůŰ[ɛœg Ħɤ Ŭɜɜœɤɤ ɜ ŭŮɜ g´ɕŭɖɔɯ ɜŮɘ Ŭ´ɕŭɕɕœ Ű›ɜ ɔɜɤɛɪ ɜ Ű£g ůgɔɔʃŮűɣŮ ?. 5343/32, Ɏʃɖʃɕ 202, ´ŮʃɎɔʃŮűɕɡ2 (ɜɕɛɣəɐ əŮŰɕɢɪʃɤ ůɖ Ű£g ĦŮŰʃɣəɕi ɸɛɐɛŮŰ£gʃ) ».

Ημερομηνία αίτησης της κ Γαζή Σοφίας: 9-2-2004

Ημερομηνία ορισμού Τριμελούς Συμβουλευτικής Επιτροπής: 529[α]/23-3-2004

Μέλη Τριμελούς Συμβουλευτικής Επιτροπής:
Επιβλέπων
Στεφάνου Δημήτριος Αναπληρωτής Καθηγητής Παθολογικής Ανατομίας Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Μέλη
Αγνάντη Νίκη Καθηγήτρια Παθολογικής Ανατομίας Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Λεβειδιώτου –Στεφάνου Σταματίνα Επίκουρος Καθηγήτρια Μικροβιολογίας Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων

Ημερομηνία ορισμού θέματος: 1-4-2004
«*Μοριακή ανίχνευση σε αρχειακό υλικό ανθεκτικών στις μακρολίδες στελεχών ελικοβακτηριδίου του πυλωρού και συσχετισμός με ιστολογικά δεδομένα ταξινόμησης κατά sydney*»

ΔΙΟΡΙΣΜΟΣ ΕΠΤΑΜΕΛΟΥΣ ΕΞΕΤΑΣΤΙΚΗΣ ΕΠΙΤΡΟΠΗΣ : 726[α]/17-1-2012

Αγνάντη Νίκη	Ομότιμος Καθηγήτρια Παθολογικής Ανατομίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Ευαγγέλου Άγγελος	Καθηγητής Φυσιολογίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Στεφάνου Δημήτριος	Καθηγητής Παθολογικής Ανατομίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Λεβειδιώτου –Στεφάνου Σταματίνα	Αναπληρώτρια Καθηγήτρια Μικροβιολογίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Μπατιστάτου Άννα	Αναπληρώτρια Καθηγήτρια Παθολογικής Ανατομίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Γούσια Άννα	Επίκουρη Καθηγήτρια Παθολογικής Ανατομίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων
Γκαρτζονίκα Κωνσταντίνα	Λέκτορας Μικροβιολογίας, Ιατρικής Σχολής Πανεπιστημίου Ιωαννίνων

Έγκριση Διδακτορικής Διατριβής με βαθμό **«ΑΡΙΣΤΑ»** στις **27-3-2012**

ΠΡΟΕΔΡΟΣ ΤΗΣ ΙΑΤΡΙΚΗΣ ΣΧΟΛΗΣ
Μαργαρίτα Τζαφλίδου
Καθηγήτρια Ιατρικής Φυσικής

Η Γραμματέας της Σχολής
ΜΑΡΙΑ ΚΑΠΙΤΟΠΟΥΛΟΥ

ɇɞ 1982 ůŰŝ ɛǓǝɟɘɧ *Perth* ŰɗƍɈɡůǗǓǝǓǥ ǓɜǓɜɤɟɑůɗɗəŮ ɘůŰɞɚɔɘƳ, əǓɚɘǗɔɐɗɗəŮ əǓə Ǔ ɞɛɞɜɩ ɗɗəŮǓ ɧ ŰɞƍɠMarshall əǓəWarren ɏɜǓɷɏɞɵ ɛɘɟɧɓɘ, ɛɞɟűɞɚɞɔɘƳɧɛɞɘ ɛŮǓɡŰƳŰɞ ɔɏɜɞƍɠ *Cambylobacter*. ɀ ɏɞɟɘ ŰɧŰǗ, əǓɜɏɜǓɠŭǓɜ ´ɑůŰǗɡŮɧŰə ɡ´Ɏɞǔə ɛɘɟɞɞɟɔǓɜɘůɛɧɠ´ɞɡ ɛ´ɞɟŮɑɜǓ Ů ɕɘɩ ůǓə ůŰŝ ŮɞɗɟɘɧɧɜɘɞˊŮɕƳɚɚɜ Űɞɡ ůŰɞɛƳɞɞɡ.

¢ ɘůŰɞɟɗǓ ɧɛɤɠ ŰɗƍǓɜǓəƳəɡɣɗɠ Űɞɡ ɛɘɟɞɓɞɞɡ ´Ƴůə ǓɟəŮŰƳ ´ɑɤ, ůŰŝ 1875, ɧŰǗɜ ũǗɛǓɜɞɑ Ů ɘůŰɛɞɜǓɠ´ǗɕɔɟǓɣǓɜ ɏɜǓů´ǗɞǓɛ ɛɘɟɞɞɟɔǓɜɘůɛɧ ůŰŝ ɔǓůǗɘɧ ɓəǓɜɞɔɧɜɞ, ´ɞɡ ɐŰǗɜ ǓɨɜǓŰɜ ɜǓəǓɚɘǗɔɗɗǓɛŮŰǗ ɛɏůǓŰɗƍŮɞɞɐɡ. Ƀ ƗŰǓɧɠǗ ǗɡɜɗŰɠGiulio Bizzozero Űŝ 1893 ǓɜǓɨɏɟɗɗəŮůŮ ´ǗɧɛɞɘǓɠɛɞɟűɞɚɞɔǓɠɛɘɟɧɓɘǓ ´ɞɡ ´ǗɟǓǗɟɗůŮůŰŝ ɓəǓɜɞɔɧɜɞ ůŰɞɛƳɞɞɡ ůəɨɚɞɡ, ŮɜɩɞɄɞɚɤɜɧɠ Jaworski ůŰɗɜ ƬɟǓɞɓɗǓŰŝ 1899 ´ǗɕɔɟǓɣŮ´Ǘɑ ɞɡ ɑɘɚǓɠɛɞɟűɞɚɞɔǓɠɛɘɟɞɞɟɔǓɜɘůɛɞɨɠůŮǓɜɗɟɩ ´ɘǓ ɔǓůǗɘƳ Ůə´ɚɨ ɛǓŰǗ. ɟ ´ɧ ŰɧŰǗ, ´ɞɚɏɠ ǗɔǓůɗǓɠ´ɟɞǗɠɧɛǓɜǓɠ Ǔ ɧ ũɘƳűɞɟǗɠɞɩɟǗɠŮǓǓɜ Űŝ űɩɠŰɗƍ ǔɗɛɞůɕŰɗŰǗɠůɠŰǓɚƳɛŮŰǓɜ ɜɏɞ ɛɘɟɞɞɟɔǓɜɘůɛɧ ´ɟɞů´Ǔɑ ɜŰǗɠɜǓ Ǔ ɞɚɟɡ´ŰɞɔǓɨɐůɞɡɜ Űɜ ɟɧɚɞ Űɞɡ ůŰɠ´ǓɗɐůǗɠŰɞɡ Ǔɤ Ǘɏɟɞɡ ´Ů Űɚɞɨ. ɃɟɘůŰɚƳ, ɧɛɤɠ, ɛɧɜɞ Űŝ 1982 ɞɚMarshall əǓəWarren ɛ´ɧɟŮůǓɜ ɜǓ ůɡɜũɏůɞɡɜ ǓɜŰɚɔɘƳ Űŝ ɛɘɟɧɓɘ ɛŮ Űɗ ɔǓůǗɘɗǗɘǓ əǓə Űŝ ɔǓůǗɘɧ ɏɚɚɞɡ. ɇɞ 1987 ɞ ɟɡůǗɜǓɧɠ ɔǓůǗŮŰǗɞɚɧɔɞɠThomas Borody ǓɘɐɔǓɓŮŰŝ ´ɟɩ Űŝ Ǘɞ´ɚɧ ůɞɛɜǓ ɗǗǓ ǓɗǓ. ɇɞ ɓǓəŰɗɟɑɘɘ ǗɟɞɘƳ ɞɜɞɛƳůɗɗəŮ*Cambylobacter pyloridis* əǓə ɚɞɞ ǗɟɔɧŰǗǓ *Cambylobacter pylori*, ůɨɛűɤɜǓ ɛŮŰɗɜ ɞɟɗɐ ȿǓŰɘɘɐ ɞɟɞɚɞɔǓ. ɀ ŰƳŰɗɜ Ǔ ɞɚɟɡ´ŰɞɔƳűɗůɗ Űɞɡ ɔɞɜɘɑɞɞɡ Űɞɡ 16S ɟɕɞůɤɛɘǓɞɨ RNA Űŝ 1989, ǓɐəǓůŮŰŰəǓɤɠǓɘɧ Űɞɡ ɔɏɜɞɠ, ůŰŝ ɔɏɜɞɠ *Helicobacter* ɧ´ɤɠɞɜɞɛƳůɗɗəŮǓ ɧ ŰɞƍɠȺɚɚɗɜɘɞɨɠɧɟɞɡɠ ɷ*Helico* - ɏɚɘǓɵ əǓə ɷBacter - ɓǓəŰɗɟɑɘɐɵ ũɜɤɟɞɞɡɛŮǓ ɧ ǓɗɟɤɠɞɚɞɔɘɏɠɛǓəɏŰǗɠɧŰə Űŝ *Helicobacter pylori* ɏɞůəůǓ Űɧ´ɞ əǓŰɓɤɔɐɠŰɗɜ ɟ ɜǓŰɚɘɐ ɟ űɟɘɐ, ɛɐǗǓ´ɟɞɏɚŮɡůɗɠŰɞɡ ůɨɔɟɞɜɞɡ Ǔɗɟɩ´ɞɡ, Ǔ ɧ Űɗɜ ɞ´ɞǓŮɘƳɛŰŰǓɧŰəũǓů´ɎɟɗɗəŮ´ɟɘ Ǔ ɧ 58.000 ɞɟɧɜɘǓ´Ǘɑ ɞɡ.

ɆɐɛǗǓ, ´ɟɞů´ǓɗɞɨɛŮǓəɧɛǓɜǓɜǓŰəɗűɗɞɨɛŮŰɗɜ ´ɞɚɨ ´ɚɞəɗ űɨůɗ Űɞɡ ɛɘɟɞɞɟɔǓɜɘůɛɞɨ əǓɜǓɟɞɞɡɛŮ űɤɠůŰɞɡɠɛɗɔǓɜɘůɛɞɨɠŮɛ´ɚɞəɐɠŰɞɡ ůŰǓɔǓůǗɘƳɜɞůɐɛǓŰǗ, əƳə´ɞɡ Ůə´ɞɞɡɛŮɜǓ´ŰǓ ɞɞɡɛŮɏůŰɤ əǓə əǓŰɵŮəƳɞɘůŰǓɛŰɗɜ ɑɘǓǗɕɐ ǓɡŰɐ.

ǓǓ ɐɗŮəǓ Ǔ ɧ Űɗɜ ɗɏůɗ ǓɡŰɐ ɜǓ ŮɡɞǓɘůŰɐůɤ ´ɟɤŰɑůŰɤɠ Űɜ ƬǓɗɗɔɗŰɐ ƗǓɗɞɚɞɔɘɐɠ ɟɜǓŰɛɗǓɠə. ɑɗɛɐǗɘ ɆŰŰɨƳɜɞɡ əǓə Űɗɜ ɟɜǓ ɚ. ƬǓɗɗɔɐǗɘǓ ɀ ɘɟɞɓɘɚɔɗǓɠə. ȿ ŮɓŮɐɘ Űɞɡ-ɆŰŮɨƳɜɞɡ ɆŰŰɛǓŰɞǓ ɔɘǓ Űɗɜ ǓƳəŮɗ Űɗɠ Ůə ɚɧɔɤ ɑǓǓǗɕɐɠəǓ ɘɘǓǓŰǗǓ Űɗɜ ɚ. ʔ ɞɗ ɟɔɜƳŰɗ, Ƀɛɧŝɛɞ ƬǓɗɗɔɐǗɘǓ ƗǓɗɞɚɞɔɘɐɠ ɟɜǓŰɛɗǓɠ, ɔɘǓ Űɗɜ ɗɗɘɐ ɡ´ɞůŰɟɘɗ əǓə Űɞɠ ´ɞɨŰɛǗɠ ůɡɛɓɞɡɚɏɠŰɗɠ.

ǓɏɚɤŮ ɑůɗɠ ɜǓ ŮɡɞǓɘůŰɐůɤ Űŝ ɑǓŮɡɗɡɜŰɐ Űɞɡ ƗǓɗɞɚɞǓǓŰɛɘɞɨ ȺɟɔǓůŰɗɟɞɞɡ ʔɞůɞəɞɛŮɞɡ ʔƗɀ ɇɆ ə. ƬǗɟǓɏɟ ɗ ɟ ɜɟɏǓɔɜǓ Űɗɜ Ǔɏɟɘůǘɗ Ů ɘůŰɗɛɞɘɐ əǓ ɗɗɘɐ ůŰɟɘɗ əǓŰƳ Űɗɜ Ůə´ɧɗůɗ Űɞɡ Ůə ɚɧɔɤ ´ɞɜɛǓŰɞɞ, Űɜ ɗɘɞɚɧɔɞ ə. ɟ ´ɏɟɔɗ ũŮ ɟɔɘɘ Ǔ ɧ Űŝ ʔɞůɞəɞɛŮɞ Ɉ´ɞɟƳŰǗɞ ɔǓŰ Űɗɜ ɓɞɐɗŮəǓ ůŰɗɜ ŮǗɚǓŰɗ Űɤ ɜ ɛɞɟɘǓɩɜ ɜ ŰŰɜɘɩ ɜ, Űɞɡɠ ɇŮɜɞɚɧɔɞɡɠ ə. ɇɞɞɡǓƳɗ ƗǓɜǓɘ ŰǗ əǓ ə. ɗɗɚǗɟƳ ũŮ ɟɔɘ Ǔ ɧ Űŝ ʔɞůɞəɞɛŮ ʔƗɀ ɇɆ əǓə Űŝ ƗǓŮ ɘůŰɐɛɘ ɟ ɗɗɜ ɜ ǓŰǓůŰɘɞŮ ɔǓŰ Űɗɜ ŰŰɜɘɐ ɓɞɐɗŮəǓ ´ɞɡ ɛɞɟ ´ɟɞɏɡűǗǓ, Űɗɜ ə. ɅŰŰɩƳƳɡ ƬɤɜůŰŰǓŰɘǓ ɔǓ Űɗ ɓɞɐɗŮəǓ əǓƳ Űɗ ǓǓǓ ɗɤɠ ǓǓɕǗɞɡǓ ɏɟɗ ɞɡ ɜ Ůə ɛɜǓŮɜɜ, Ǔǔə əǓ ɧɚɞɡɠ ǓɏǓɗɔɠ ´ɞɡ ƳɛŮǓǓ ɏɛɞǓ ůɡɛɓŰɐɗɗɞɜǓ ůŰɜ ɞǓɚɞəɗɟɤ ɗŮɑɗ ǗɟǓůəǓ ɡɐ.

Ɇ Ű ɖ ɜ ɛ ɜ ɵ ɛ ɔ ɣ ɜ Ů ɔ Ɏ ɛ ɛ g

Ɇ Ű ɜ g g ƒ ű œ ɵ ɛ g g ƒ ´ ɛ g ɛ Ů b ɛ ɐ ɗ ɖ ů Ů ɜ

Ŧ∧Bş ƀũBƐ

¢ Ű ɵɜɵɛɐ Ű̃ɵg ɓɻŰɓŮœg Nobel ĦŰŰ̃ɻɘɐɠŰ̃ɵ 2005 ůŰ̃ɵggſ Warren əŰɔ Marshall [1-3] (***Ásəɦʒŭ* 1**), 22 ɵəɦəɘɗɻŰɠɻɦɜəŰɛŮŰ̃Ÿ Ű̃ɭɜ ŰɜŰɔŸəgɣɗ Ű̃ɵg ***ÁɔəɘɓŭɔŰ̃ɭɜŭœg Ű̃ɵg ´gəɤɻɛi*** *(Á´)*, Ű ɵŰ̃ɓɔůɑ Ű ɦůŮɔɘɗ ɦŰɔɵ Ůɜ əɦɔɤ ɛɘɻɵɛɠɻɔŰɜəůɛɦſ´ŮɻŰɛɣɜŮɔ´Ÿ3ŰŰ Ů œŮɻɵɛſəŰɔůŰɜ ´ɻɵůəɐɜɘœ Ű̃ɵg ŮɜŭəŭŭíɣɻɵɜŰ̃ɵſ Ű̃ɭſ ŭəŮɑɜɵi ſ ŮɻůɑɜɗŰɘɐɵſ ŭɻŰůŰ̃ɭɜɦŰ̃ɭŰŰ̃ſ. Ƀi Űɤſɐ Ÿɔəɤſ Ű̃ɵ ***Á´*** ŮɒŰɔ ɣɜŰ ŮɜŭɻůŰɘɦ ´ŮɻŰɛŰŰɘɦ ɛɵɜŰɣəɵ ɔəŰ̃ɭ ɛůɔɣŰ̃ɭ ɛɗɢŰɜəůɛı ɜ ´Ű̃ɗɵɔɣɜŮůɗſ´ɵg Ůɛ´ɔɣəɵɜŰŰɔůŰɑſ ɢɻɦɜəŮſ ɔɵɛı ɜŮɑſ, Ű̃ɔəŸ əŰɔ ɛɗɢŰɜəůɛı ɜ ´ɵg űŰɒŮŰŰɔ ɜŰ ůgɜŭɣɵgɜ Ű̃ɭ ű̃ɔŮɔɛɵɜɐ ɛŮ Ű̃ɭɜ ɜŮɛ´ɔŰůɛŰŰɛɔɣɜŮůɗ.

Ƒ Ű̃ɭ ŭəŸəŮɜɗ ´ɵg ɣŭɤůŮ ɵ ŽŰɗɗɔɗɭŰ̃ɵſ Robin Warren ůŰ̃ɭɜ Á´əŰɻɵ´ɐ Ű̃ɭſ ɗɒŰůəɔəɐɵſ ɻ əŰũɗɛɗŰ̃ſ Ű̃ɭſ ƑɵgɗŭɗŰ̃ſ əŰŰŸ Ű̃ɭɜ ɗɛɣɻŰ Ű̃ɭſ ɓɻŸɒůgůɐɵſ Ű̃ɵg ŰɜŰíɣɻŮəŰɔŰŰ´ŰɻŰɔŸŰɤ: ɗƑŮ ŭəŸűɵɻůſ ůŰɒɛɣſ ŰɜŰɻɤŰ̃ɗɗəŰ: ž ɐ´ɤſ ɣəɔůɣŰ Ű̃ɭɜ ŰɜŰɔŸəgɣɗ; ž ɐ´ɤſ ŮgŰ̃ɐ ɐŰŰɜ Ű ɵŰ̃ɣəɔůɛŰ əŸɵŰſ Ÿɔɜɤ ůŰ̃ɭſ ůŮɛɣſ Ű̃ɻůgɜɗŰɘɐɵſ ŮɻɔŭůɗŰſ; ō ŰŮɔəɘŸɐŰŰɜ Ű ɦ əŰɔɐ Ű̃ɻɵɗ; ¢ Ű Ÿɜŭ̃ɭůɗ´ɵg ɣŭɤůŰůŮɦəůſ Ůgŭɣſ Ű̃ɵſ Ůɻɤ Ű̃ɐůŰɵſ ɐŰŰɜ, ɦɵɑ ÁɒŰɔűŰɜŮɻɦ ɦŰɔɔəŰ əŸɗŮɜɣŰ Ű̃ɜŰɔŰɔŸəgɣɗ ɗɣəůɵſ Ű̃ɻɵɗ. ɻ ´əŸ, ɣŰgɵŮɜŰŰɛŰɔůŰɛ ůɤůŰɦ ɛɣɻɵɛſ Ű̃ɭɻ ůɤůŰɐ ɪɻŰəŰɔɜŰ ɣɵɤ Ű̃ɛ Ůɜŭəŭŭíɣɻɵɜ əŰɔ´ɵſŰɪ ſ Ű̃ɵſ ɔəŰɪɦŰŰŰſɜŰ əŸɜɤ əŸŰɔ´Ůɻɔůɦ̃ŰŰɻɵ Ű ɦ Ű̃ɛ Ű əɤ ſ ɜŰ ´ɻɵů´Ůɻ Ÿůɤ ɛɔŰŮɜŭəŭŭíɣɻɵgůŰ´Ůɻ ŰŰ̃ɐɻdůdô

ž Ů ŮgŰɦ əŰɔ Ůɛůɗſ əŰŰŸ ɜɵg, ůŰ̃ɭɜ ŮɻɔŭůɑŰ ɛŰſ ŮgŰɐ ´ɻɵů´Ű̃ɗɐůŰɛŮ ɜŰ Ű ɵəɻſ g´Ű̃ɵɔɻŰíɐůɵgɛŮ əŸ ɵɜɵgſ Ű ɦ Ű̃ɵgſ Ű̃ɻɦ´ɵgſ Ůɛ´ɔɵəɐſ Ű̃ɵg ´Ůɻɗůɻɔɵg Ůgŭ̃ɵi ɛɔɘɻɵɛɻɔŰɜůɛɵi ůŰ̃ɭ ɜůŰ̃ɵɔɐɵɔŰŰíɤɜ ɔŰůŰɻɗŰ̃ɔɣɜŰ̃íɤ ɜŰɒɜŰŰ̃ɵgſůgɜŭgŸůɵgɛŮɛŮůgɻɐɛŰŰ̃ŰɻɦŰ̃ɭ ɛɵɻɘŰɐ ɓɜɐɔɗŰ̃ɵg ɛɔɘɻɵɓœg.

***Ásəɦʒŭ* 1**: Ƀɔ Ž Ű̃ɗɗɔɗŭɣſ Marshall (ŮɻɜůŭɻŸ) əŰɔ Warren (ŭŮɜɔŸ)

Nobel ĦŰŰ̃ɻɘɐɠŰ̃ɵ 2005 ɔɘŰ̃ɭɜ Ű̃ɜŰɔŸəgɣɗ Ű̃ɵg ***Á´***

ÜÉ?ı T ı É Ü ÁÂÅÉÁj Bz Á? q ?

ũÁ Ɂ ĦĬ Ƀ ɀ ÁΛɃ Ɇ

1. ¡ ŰĵŰəŰĎŰĵɛşůŰəŶŰŧg *Ásəɒɛ́bŰəŰĎŰĵɛşůœɛg Űŧg ´gəɤɾĵɛi (Á´)*

¢ɛ ***Á´*** ŰœŰə Gram (-), ɛɔəĵɛŰŰĵɦűɔəɛ ɓŰəŰĎĵɛɔɛ [4] ɛŮɛĵɛşůɛɣɜŰ ɛűɵŰĎŰĵŰ ɠŰĵŰəŰĎĵɛşůŰəŶ ´ɛg Űŧ ɜŮɠɤĵœɛgɜ ŰɾɦŰŰ ɓŰəŰĎĵɛɔŰ Űŧg ɔɣɜɛggſ *Campylobacter* (ɦ´ɤſ ɔɵŰ ´ŰĵŶŭŮəɛŰ Űŧ *Campylobacter jejuni* Űŧg ŮɜŰŷĵɛg) [3;4]. ¢ɛ ***Á´*** ŮɜɐəŮə ůŰŧ ɔɣɜɛgſ Űɤɜ *Helicobacters* ´ɛg ɛɛəɨɜɛgɜ Űŧɜ Ŷɜdĵɤ´ɛ əŰəŶəəŰdđəŰůŰəŶəŰə´ɛg ŭɵŰəĵœɛɜŰŰəůŮɔŰůŰĵəŶəŰəɛđɔŰůŰĵəŶ (**Ŧœ**ŰəŰg **1**). ÕɠŮə ůɠɐɛŰ Ůəɔəɛůəŭŷſɐ əŰɛ´gəɛůəŭŷſ, ů´Ŷɜ9Ű ůűŰĵəɔɦ, ɛɐəɛſ 2,5-5ɛm əŰə ´əŶŰŧſ 0,75-1ɛm (***Ásəɦɜ**Ű* **3**). ĵ´ɦ Űŧɜ ɣɜŰ´ɦəɛ Űŧg ɜŮəɔɛɨɜ 4-6 ŮəgŭĵɛűɦĵůſɓəŮűŰĵœůg´ɛg əŰŰŰəɐɔɛgɜ ůŮŭɔəɤɛɣɜɛ ŰŮəɔɦ Ŷəĵɛ (***Ásəɦ**ɜŰ* **4**). ŦəůŰŮŮŰəɦŭə ɛɣůɤ Űɤɜ ɓəŮűŰĵœůɤɜ Ůgŭĺɜ Űŧ ɛɔəĵɦɓɔɛ ɛ´ɛĵŮůɜŰ´ĵɛůəɛəəđđůuŰəəŶəŰəɜŰɛŰŰŰəɔđđůəůŰŧ ´Ůɛɨĵůgůůŧ ůŭĵı ɛŰ ɓəɣɜɜđſ [5-7]. ĵ ɜŰŧůı ɛŰŰŰ ŮəŰəŰŰɛɜ Űŧg ***Á´*** ŭŰə ´ŰĵɛgůəŶŧɛgɜ ŭɵŰŰŰgĵɛɨɛŰəđ ŰəŰŭĵŰůđ ɛŮ ŰgŰŶŰɤɜ *Campylobacters* [8;9].

ŦŰĵŰəɦɛŮəŰ ɣɜɛgɛŰ: ¢ɛ ***Á´*** ɠŰĵŰəŰĎĵœŮŰŰə Ű ɦ Ű đŧɜ ɔəŰɦŰđŰŰ ´ŰĵŰəɤɔɐſ ɛŮəŶəɤɜ ´ɛůɛŰĎŰɤɜ Űŧg Ůəɛɨɛɛg ɛgĵŮŶůđ ůŰđŧɜ ɛ´ɛdŰ ɓŰůœɛɜŰŰə əŰəɛɵ ŭɛəɛŰůdůſ ɛgĵŮŶůđſ ɛŮŰgſ ɛ´ɛdůſ ŰəɛɜŰɨ ŮŰŰə [10]. Á´ůđſ´ŰĵŶŮəŰŰ ɣɜɛgɛŰ əŰŰŰəŶůđ, ɛɜŮəŭŶůđ, Ůəəŭəɛəɐ űɤ ůűŰŰŶůđ əŰə ɔ-ɔəgŰŰɛɛɛŰĵŰəů´Ů Ű ŭŶůđ. qŮə ´ŰĵŶŮəŰəɤɔŭŶůđ Űɤɜ ɜɵĵɛəı ɜ əŰə gŭĵɛəŶůđ Űɤɜ ɵ´ɛgĵɛəı ɜ [11].

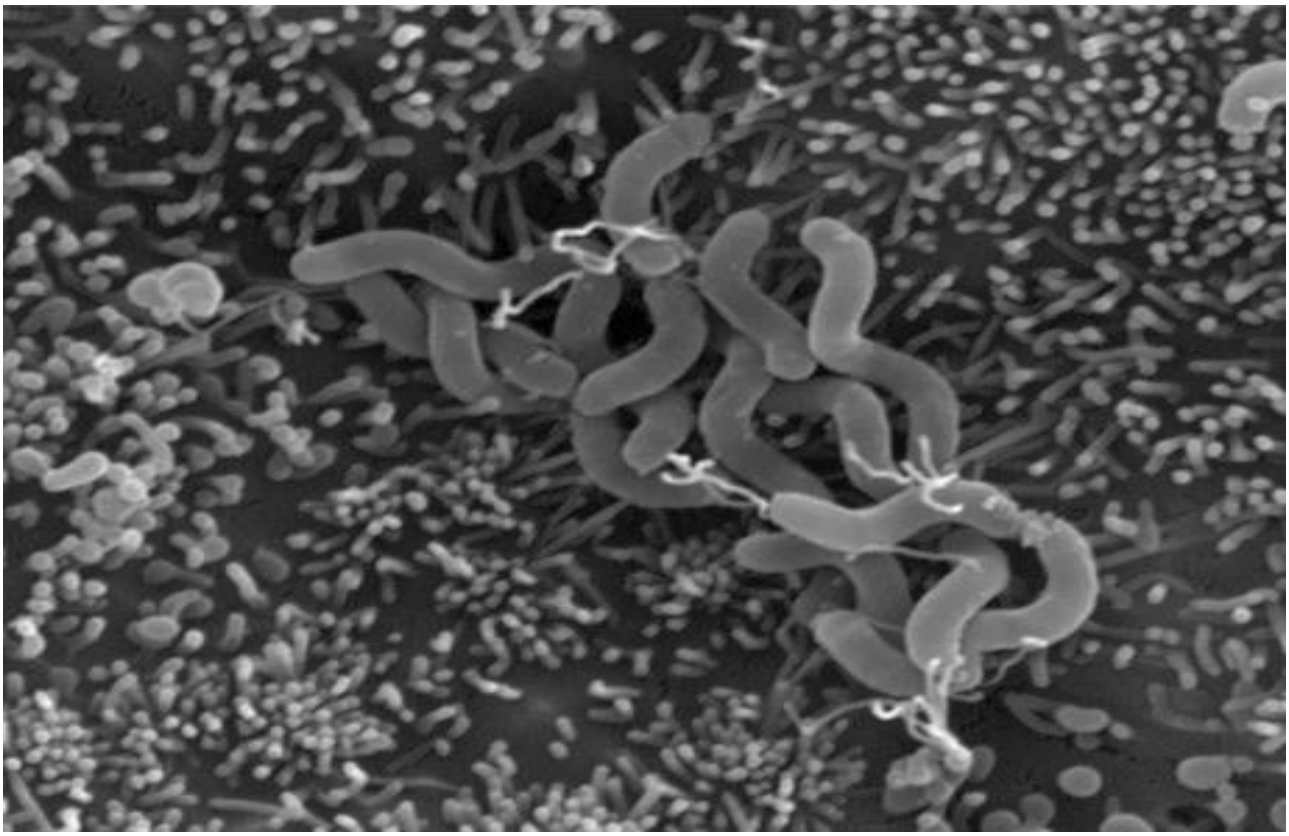
ŦŰĵɛŮəŰəɦŰđŰŰ ůŮɜɛgəəŮpəəŶɛɜɣŰ: ¢ɛ ´ɛůɛůŰɦ Űɤɜ ɓŶůŮɤɜ Tgŭɛůœđſ(C) əŰəũɛgŭəœđſ (G) Űŧg DNA Űŧg ***Á´*** ŰœŰə 36-38 mol% C+G əŰəůŭŰıſŭĵɛĵŰŰəɦ Ű ɦ ŰŰŮűđ Űŧg ɔɣɜɛggſ *Campylobacter* (ɔəŰ ůɨɔəĵɛůđ Űɛ *C. jenuni* ´ŰĵɛɣɢŮə 30-32 mol% C+G). Á´ůđſ ŰŰ 16S ĵɛɓɛůɤɛɣŭəɛɨ RNA Űŧg ***Á´*** ŭɵŰĺɣĵŮəŰ ɦ ŰgŰɦ Űɤɜ ***T**Ű**ɛ´gəɛɓŰəŰĎĵɛşůœɤɜ***, Ůəı ɛɛɛɵŶɛŮə ɛŮŰŧg RNA Űɤɜ ɛgĵŮŶůđ (+) *Flexispira rappini* əŰə *Wolinella succinogenes* [12-16].

Ŧɛɨ ůŰŰůđ əgŰŰŰĵɛəɛɨ Űɛəɛı ɛŰŰŧgſ ůŮəɤ´ŰĵŶɛɜɣŰ: ¢ ůɨůŰŰůđ Űŧg əgŰŰŰĵɛəɛɨ Űɛəɛı ɛŰŰŧgſ Űŧg ***Á´*** ůŮəɤ´ŰĵŶɛɜɣŰ ŮœŰə ŭɵŰĺɛĵŰŰəɐ Ű ɦ ŰgŰɦ Űɤɜ *Campylobacters*. ŦŰĵɛɣɛŮə ɛŮəŶəɛ ´ɛůɛůŰɦ (>35%) ŭŮəŰŰŰĵŰɜɛɯɦ ɛɜɨ (14:0) əŰə ɛɐəĵɦ ´ɛůɛůŰɦ ŭŮəŰŰɜɛɯpɛɨ ɛɜɣɛgſ (16:0) (<8%), Ůəı Ű ɛgůɵŶɛŮə Űŧ 3-gŭĵɛɜg-ŭŮəŰŰŰĵŰɜɛɯɦ ɛɜɨ (3-Ƀ¢-14:0), gŭĵɛɜgŭŮəŰəŰŰɜɛɯɦ ɛɜɨ (3-Ƀ¢-18:0) əŰə 19-əŰĵɓɛɜg-əgəəɛ´ĵɛ´Űɜəɦɛɜɨ (19:0 cyc) [17-21].

¢ɛ ɔʏɜɛɡʃ *Helicobacter*

	***Helicobacter pylori* (type species)**	***Helicobacter nemenstrinae***
ũŬůŰĵəəŸ	*Helicobacter mustalae*	*Helicobacter acinonyx*
Helicobacters	*Helicobacter felis*	*Gastrospirillum hominis*
	Helicobacter fennelliae	
ɾ ɖ	*Helicobacter cinaedi*	
ɔŬůŰĵəəŸ		
Helicobacters		
	Helicobacter muridarum	

ĦœŬəŬʃ1. ĦœŬəŬʃɔŬůŰĵəəɪ ɜ əŬəɛɖ ɔŬůŰĵəəɪ ɜ ***Ʌəəɵɛbŭəŭʃĵɜŭɛůŭɪ ɜ*** Ŭɜɖĵɪ ´ɛg əŬəŸəəɤɜ ɖɖəŬůŰəəɪ ɜ (ůŰɛɜɑůŭŰɤɜ Lee əŬəOðRourke, 1993 [22]).



Ábra 3. Ürülékben található *Campylobacter jejuni* baktériumok pásztázó elektronmikroszkópos képe (23).

Történelem: Először 1973-ban írták le *Campylobacter* nemzetséget, amelyet akkor *vibrio*-szerű organizmusnak neveztek el. Később kiderült, hogy a genom 62, 53, 50, 39, 257 21 és 19 kilodaltons közötti plazmidokat tartalmaz *Cambylobacters* (17-20).

Jelentősége: A *Campylobacter jejuni* a világ egyik vezető bakteriális okozója a gyomor-bélrendszeri betegségeknek, amelyek a fejlődő országokban a gyermekhalandóság jelentős részét okozzák (24). A *Campylobacter* fertőzés leggyakrabban a baromfi, kevésbé gyakran a szarvasmarha, juh, kutya és macska fertőzött ürülékével szennyezett élelmiszer vagy víz fogyasztásával terjed. Ázsiában, Afrikában és Latin-Amerikában a fejlődő országokban a gyermekek körében a hasmenéses megbetegedések egyik leggyakoribb okozója. A *Campylobacter jejuni* (25;25). Ezért is fontos, hogy a fejlődő országokban a fertőzés terjedésének megakadályozása érdekében a szennyvíz kezelésére nagy hangsúlyt fektessenek, mivel a szennyvíz a baromfi, szarvasmarha, juh, kutya és macska ürülékével szennyezett élelmiszer és víz fogyasztásával terjed, ami a fejlődő országokban a gyermekek körében a hasmenéses megbetegedések egyik leggyakoribb okozója. A *Campylobacter jejuni* DNA szekvenálása során kiderült, hogy a genom 1,6 millió bázispárból áll (26).

Ásəɦɜ Ŭ 4. ū ɤ Ű̈ɛɔɻ Ŭűíɑŭ ɛ Ůɖəʟůɛ Ű̈ɻ ɛɜəɻ ɛəůəɦ´ ɜɛ ůŸɻɤ ůɖɖ´ ɛg ŭůɑɛɜŭɒ Ű̈ɡɻ ɛŭɻ Ŭɒ Ű̈ɖɻ ɜůŭ̈ɒɵɡɻ ɒgŭɻ ɛűɦɻ ůɻ ɓəʟűíŭɻ ɑŭůɻ Ű̈ɛg ***Á´*** ɛ Ů Ű̈ɡɻ ɛ´ ɛɖůɻ Ŭgŭɦ ´ɻ ɛůəɛəəɴÝűŭɒ Ŭəəɴ ə Ŭɒ ɛ Ůűŭɒɜɒůűŭɒ ůŰ̈ɛ ɔŭůŭ̈ɻ ɜəɦ ɓəʟɜɜɛɔɦɜɛ.

2. Методы исследования

Для решения поставленных задач нами было обследовано 30 больных с ишемическим инсультом в бассейне средней мозговой артерии (27). Все больные были обследованы в остром периоде заболевания (в среднем на 5-7 день от начала заболевания). Все больные были обследованы неврологически, нейропсихологически, с использованием шкалы инсульта Национального института здоровья США, шкалы Рэнкина, индекса Бартел, а также с использованием нейровизуализационных методов исследования (КТ и МРТ головного мозга).

Таблица 2.

Методика	Средний балл (%)	Средний балл (%)	Время выполнения	Чувствительность*
-Тест Шульте	77-92	100	Нет	+++
-Корректурная проба	93-99	95-99	Нет	+++
-Проба Бурдона	88-99	86-95	Да	+
-CLO-test	89-98	93-98	Нет	+
-^{13}С-дыхательная проба	90-100	98-100	Да	+++
-^{14}С-дыхательная проба	90-97	89-100	Да	++

Для выявления: +++ = высокая, ++ = средняя, + = низкая

*по данным исследователей, использовавших данную методику.

Таблица 2. Диагностическая ценность различных методов исследования при хеликобактерной инфекции (по данным Brown и Peura (28)).

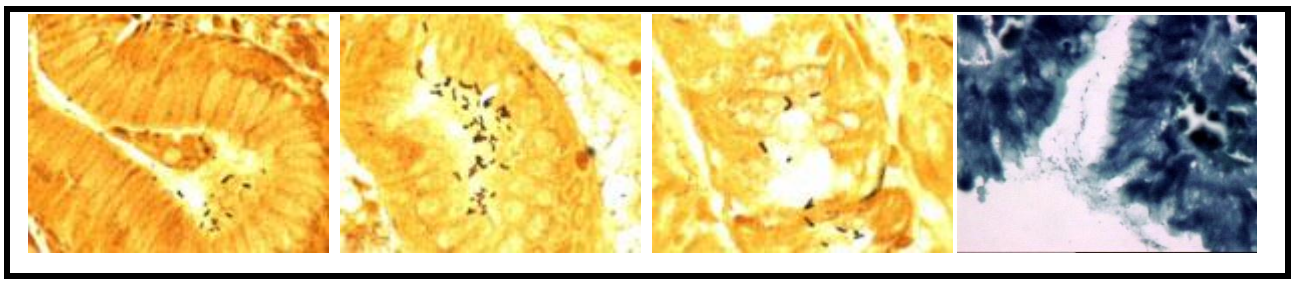
Тест Шульте

Тест Шульте был предложен немецким психиатром Вальтером Шульте для исследования внимания (29). Методика теста: на листе бумаги в случайном порядке расположены числа от 1 до 25. Задача испытуемого – найти и показать все числа по порядку. Время выполнения теста фиксируется. Тест Шульте используется для исследования концентрации внимания, его устойчивости, переключаемости, а также скорости зрительного восприятия. Для оценки результатов теста Шульте используется таблица, в которой указаны возрастные нормы времени выполнения теста (30-32).

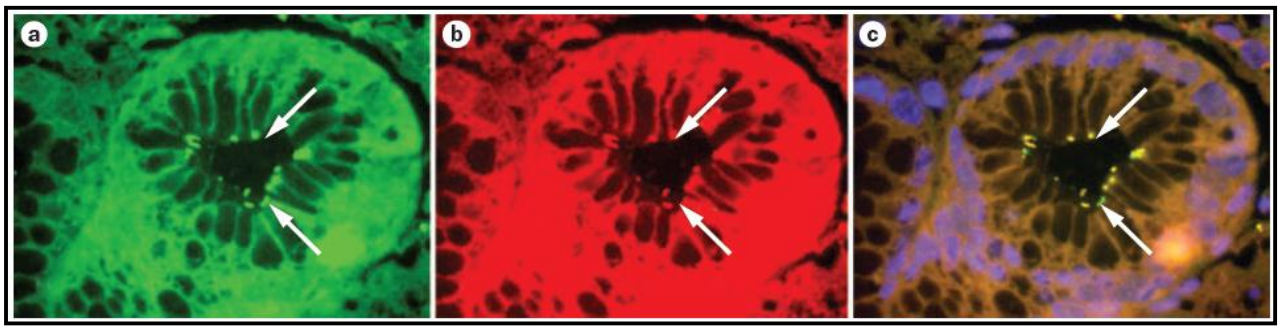
üi¤e Ùa ÙÚ¤ùÚÝÙùx ÚÙj¤a Ý Ú¤g ´ g¤x¡j¤a¤i ùű¤a ÚÞ¡j Ù Hü¤ÙÚÚÙj¢q ű¡j¤3 ÚüÙ´¡j ý Ùa3 Ù´ Ùg¡3 ÙÚÙa¤a Ù Úq¡3 Ùű Ù¡j ε¤c¤e Ýüd´ Ú¤x3 ÚÚ¢3¤a¡3 ¤ Ù ÚÚÝÝ Úq ¤e ɣ¢g ü Ùüne Ù Ú¤g f¤a Ù¤ü¤ÙÚ¤ùÚ¤a¤e Ù ¤ù ÚÚùg¡x ùd Ú¤g c Ù Ú ùj¤a¤ó´ œg ε ÙÚÚa¤i Ú¤x3 Ùa ü¤ù¤a¤ó´ e ù Ú¤x3, Ú¤î Ùa ñgf¤c¤ Ù Úq¡3 ´ j¤ù Ú Ú ùd Ù Ú¤g Ü ùd Ùa¤i f¤a Ù Ú¤î Ù Ú ¡g¤c¤ Ù Úq¡3 Ù ε ű g¤e Ù ù Ú¤x f Ú¤x3 ü Ùne Ý Ú¤x3 [33]. ¡ ´ Ù¡j Ùd Úq¡ ´ j¤ó ñd Ùù d¤c¤ Ù Úq¡ b¤x ù¤ñ Úq¡ Ú Ú¤g ε¤a¡j¤b œg Ùn Ù a d Ù ε ù Ú¤e¤ Ú¤g ü Ùne Ù Ú¤f ù Ù d Ù¡j ε¤a¡j Ù ù d Ù 4ºC. Á Ý3 Ú Ù ü Ùne Ù Ú Ú ´ j ñ¤a Ù¤ Ú¤3 Ù ε Ù¤e¤ Ú¤g ε¤a¡j¤b œg Ùn Ù a d Ù ε ù Ú¤e¤ Ú¤g ü Ùne Ù Ú¤f ù Ù Ú ¡ù¤ù¡j¤d d¤i3 ε¥ù Ù ù Ù Ú¡ù ù Ù¡j Ù f (4) ¡ j Ù f Ù ñ Úq¡ ¤e¥d, ε´ ¤j¤i3 Ù ε Ú Ú ú Ù¡j d¤i3 ¤a Ù ù Ù ű gù ¤ ¤e¤c¤ñ ¤j ñ. Æ Ù ´ Ù¡j d Ú¤ ù d ¤a Ù d gù Ú¡ù¡j d ù d f ¤a Ù ε¥g¡¥ Ú¤ ´ ¤e¤i Ù¤e¤ù¤ù¡ù Ù¡j ¤f (24) ¡ j Ù f, ´ j¥ý Ù¤ 3 Ù g¡d ù¤ε´ ¤s d¤i3 Ù¤ü¤e Ý g¤e¤e Ý ε Ú Ú ú ε¡j Ý g f ñ´ ¥ f ¤ d Ù¤e¤c¤e¤e¤c¤e¤ñ f ε¥x ε ñ f, Ú¤ g¤e¤ñ Stuart a Ù Ú¤ g¤e¤ñ ε Ú Ú ú ε¡j Ý g Portagerm © Úq f Ú Ú ù¡j Ù d Ù f BioMerieux [34]. ü¤e Ù Úq¡3 a Ù a¤e¥¡j c Ù¤ Ù¥g ε¤g¡3 g¡d ù¤ε´ ¤s d¤i Ù ε Ù Ù ¤ Ú ú g¤i Ù ü¤e Ý ú ε¡j Ù g¤e¤e Ý ñ´ ¥ f Ú¤ GAB-CAMP e Ú¤ g¤e¤ñ Wilkins-Chalgren© ´ ¤g ´ Ù¡j ¤¥g Ù¤ Ù ε Ù Ù¤ñ c¤g a Ù¤ Ù¤ Ú ñ b¤ Ú ñ¤e Ý [35]. ¢ Ù ı Ù ù d c¤ Ú Ú ù Ù ε¤a¡j ε Ù Ù¡j ñ b¤ Ù f ù g3 d e¤ Ù f ù Ù Ù ü¤a¤i f d Ù¤Ý ε¤g f e ű¤Ý¤ Ù f c¤ Ù 3-5 d ε¥y¡ Ù f ¤ Ù¤ ù Ù d Ù¡j ε¤a¡j Ù ù d Ù 37ºC. Ð¤ Ù ε¤a d Ù f Ú¤g **Á´** ù Ú¤ g¤e¤ñ ¤ Ù¤a¤e¥¡j c Ù¤ Ù f Ù¤ Ù¤ ε¤a¡j¥y f, ü¤ Ú ű Ù¤ Ù ù f ¤ Ù¤ ε d Ù¤ε¤a g Ú¤e¥y f. ¢ Ú Ù g Ú¤ ´ ¤d ù d c¤ Ú Ú ε Ù Úq¡ f ù d Gram ¤ Ù¤ Ú¤f Ù¤ Ú¤ü¡j Ý ù Ù¤f ¤3 Ù¤ü Ý ù d f, ¤ Ú Ú Ù¤e Ý ù d f ¤ Ù¤ ε¤g Ú¤e¥y f [36]. Á Ý3 Úq¡j d d¤i3 ¤9 ´ Ù¡j Ù Ý3 ¥ ´ j¤ñ ´ ¤d ¥ ù Ù¤f, d ¤a Ù¤e¥¡j c Ù¤ Ù ¥g¡ Ù¤ g¥ d¤e Ù g Ù¤ ù d d ù d Ù´ ¤g ´ ¤d ù ¤Ý¢ Ù¤ Ú¤ 90%, ε Ù Ù¤ü¤ñ Úq¡ Ú Ù 100%.

Ñù Ú¤e¤c¤e¤e Ù¤c3 Ù g ù d - Á ¤ ü¤e ¥ f g¡ı ù Ù¤f

¡ j ¤e Ý, c ¤ Ù Úq¡3 ¤ù Ú¤e¤c¤e¤e Ù¤c3 Ù g ù d Ú¤g **Á´** g¡d ù¤ε´ ¤e d d¤a Ù ù Ú Úq¡3 Ù¡j ¤e Ú¤g¤e Ý ¤ù Ú¤3 a Ù ù g ù Ú¤ñ¡3 Ù ¤a¤e¤e¤ù¤ü¤i f Ù¡j ¤i¡j ¤g (g¡ı ù d Warthin-Starry) d ε´ ¤d Ù d Ù¤j e d d¤a Ù x f d ´ ¤e Ù¤ü¤e e (**Á ¤e ñ 3 Ù 5**) [37]. Æ e ε Ù¡j Ù, Ú¤ **Á´** Ù¤g¤3 Ù¤ì Ù Ú Ù¤a ù Ú Ù ¤ù Ú¤e¤c¤e¤e Ý ´ Ù¡j Ù ù a Ù g Ý ù e Ù Ú Ù a Ù¤ ε Ù ü¤e Ý ú ¡j Ù f Ý ¤a¤e Ù f ¡g¡ı ù Ù f. Ô Ù ù ¤, ε´ ¤j ù n3 Ù Ù¤a Ù¤ü¤3 x j ¤ù d ù n Ù ¤ù Ú¤e¤c¤e¤e Ý ´ Ù¡j Ù ù a Ù g Ý ù e Ù Ú Ù Ú¤x ù ¤ d, ε Ù Gram, Giemsa, Gimenez a Ù Acridine-Orange. Á´ ù d f ¥g¤e g¤3 g¡d ù¤ε´ ¤s d¤i Ù a Ù ¡ 3 ¤ù ¤ú ¤Ú¤g¤d ε¤a¥y f ε¥y d ü¤e ¤ Ù ε Ù g¡ e ù d Ù¤a ù ¤ñ ´ Ù¡j ¤3 Ù¤ü Ý ù d f a Ù Ù¤ü¤i 3 Ù¤ü Ù¤ Á´ ε ¤3 ¤e¤a¤x ¤e¤i 3 Ù¤ü ù x ε Ý ú Ý3 ´ ¤g ñ ε x f Ù n Ù a Ù ű¡j Ù f ¤e ¤3 ¤ε ¤e Ý [38]. Á ü¤e ñ Ú Ù¡j Ù d g¡ı ù d Giemsa Ù n Ù ¤¡j e ¤ g¡j d, ű d d 3 e a Ù Ù¡ e ¤a d ε¥y d ü¤ f a Ù ε Ù ´ Ù¡j ñ ε¤a Ù ´ ù ¤ù Ú Ý Ù¤c3 Ù g ù d f ε Ù Ú 3 ´ Ù¤ Ù ñ Ú Ù¡j Ù g¡d ù¤ε´ ¤s d¤i ε Ù¤d Ú Ú ¤3 ¤e¤a¤e Warthin-Starry. ¢ ¤e ε Ù¤3 ¥ a Ú ε Ù Ú f ε Ú ñ ü¤g Ù n Ù d Ù¤e¤ó¥ f g¡ı ù d Ú¤g ´ Ù¡j b Ý¤e¤3 Ú¤ f ¤ü¤i ´ ¤g a Ý3 Ù ´ j ¤ b d ε Ù Ú¤e Ú 3 ü Ú¤e¤c¤e¤e ε Ù¤¥ Ú [37]. ¡ g Ú ñ Ù¤ Ú¤ Ú ´ œ Ú Ú Ù ε Ù Ú 3 Ù¡j ¤´ ¤´ ¤s d ε¥y d g¡ı ù d Wright-Giemsa ε Ù Ú 3 ¤´ d Ù Ù ú g¡c Ý3 Ú Ú Ù ´ ¤e¤i a Ù¤e Ù g Ù¤ù d ù d Ù a Ù Ù¤ü¤ñ Ú Ú ù Ú 3 Ù¤ g ù d Ú¤g **Á´** Ù¤e Ý a Ù ü¤ Ú Ú ¡j d ù d Ú Ú f ü d ¡j g¤ Ù¤ñ 3 Ù g [39]. Á´ ù d f Ú¤ ε¤a¡j ñ b¤ ε´ ¤j Ù n3 Ù Ù¤g¤3 Ù g d Ù n a Ù ε Ù Ú 3 ε¥y d ü¤ Ú¤g ū d¡j œ3 Ú¤ f *in situ* J ñ¡j ü¤ù ε¤i (FISH). ¿ Ù Ú 3 ε¥y d ü¤ Ù g Ú¤ a Ù ε Ù Ù¤ü¤ñ ¤i f g3 d d ý Ú f (probes), ε´ ¤j¤i3 Ù c œ ¤g3 Ù ù d f ü¤a Ù¤j ¤ Ý Ù ɑ Ú¤g ¤ù Ú¤i ù Ú Ù¤ý¥y d ε Ù Ù3 d Ù¤ñ Ú Ú ù Ú 7 a Ù¡j ¤f¡j ε ε g¤œ d (**Á ¤e ñ 3 Ù 6**).



Малюнок 5. Різні види Warthin-Starry (срібне просочення) забарвлення *H. pylori* у біоптатах слизової оболонки шлунка. Зображення взяті з роботи Giemsa та співавт. (збільшення 1000×) [37].



Малюнок 6. Метод FISH. Різні штами *H. pylori* (a, b, c) та їхня ультраструктура (d, e, f). Зображення взяті з роботи Rimbara та співавт.[40]

Вплив антибіотиків на ультраструктуру

Ще одним важливим аспектом є вплив антибіотиків на ультраструктуру *H. pylori*. Відомо, що деякі штами можуть набувати стійкості до антибіотиків, що ускладнює лікування інфекції. Дослідження показують, що зміни в ультраструктурі можуть бути пов'язані з механізмами стійкості, такими як зміни в клітинній стінці або мембранних білках [28;42-45]. Ці зміни можуть впливати на ефективність антибіотичної терапії, оскільки вони можуть знижувати проникність антибіотиків або змінювати їхню мішень. Таким чином, вивчення ультраструктурних змін у штамах, стійких до антибіотиків, є важливим для розробки нових стратегій лікування та покращення існуючих протоколів терапії [46].

[illegible] 40 [illegible] [47-49]. [illegible] *[illegible]* [illegible].

[illegible] (ELISA) [illegible] [50]. [illegible] kits [illegible] kits [illegible] cut-off [illegible] cut-off [illegible] ***[illegible]*** [51-56]. [illegible]:

- «[illegible]» [illegible],
- [illegible],
- [illegible] shock [illegible] 120.

[illegible] kit. [illegible] kits [illegible] 90% [illegible] [57-62].

[illegible] *[illegible]* [63]. [illegible] *[illegible]* [60;62]. [illegible] ***[illegible]*** [illegible] IgG [illegible] [64]. [illegible] 6 [illegible] 6 [illegible] IgG [illegible] [65-69]. [illegible]

dεyμŬəŬbεŮĹŒз αΰœ ŬъŮĹĹŮŮĹ, эЭŬзŬŮœŬъ ůgэəμαΰœŬ ĹĹŬ ŬеĹĹъyůεŬĹĹ. qpŬъ ŮœŬъэзγůŮĥ ŮŸз ĥəеэеэŬΰdŬъŮgĺэœезĹĹъеμεŬμзdĹŮъеαεŮĹŸĹdĹμŬ ŮαŬəеœγзdgŬ ĥ **Ѧ´** (41;70).

¢ŮъŮgĹĹΰŬyGeg3 ´μεĹĹdŮαŬъеůεŬъegεэygΰœəœŬΰdĹg´eg ε´eμei3 3ŬŮъĹĹъŮΰdei3 ůŒ эŬΰĹμŬъŮĹμеəээĥ ЭŬĹμŮœ əŬъŬ ĥ εd ŬъŮαΰэŮgεy3e ´μεůγ´эĥ. qpiе Ŭ ĥ ŬgŮΰyGeg3 yэəμзůd Ŭ ĥ Œ FDA. Ѧœŭъ ΰdd3ĥĹĹμĺgΰ əŬъ ΰœeg3 Ŭ еĹΰyəŮΰεŬ эμеэеμŬ, Ŭъəə¥ ĹĹŬ ε¥GμэеůεεĹμŬ ůŒэGŮΰŬΰœ3eg3 ĥĹъyGeg3 ůGĹΰъə¥εэμеůε ΰэŬъ3γůŒъе ŬъμdŮъŬ. ζ Ůъе3yəĹdεŬŮœŬъĥĹъΰœeg3 ´eœŒъĥ ŬеĹΰyəŮΰεŬ ŬеəəŮœе3ĹĹĺf yΰΰэ ĹdĺЗ GμdůεGе´eodůе Œggf эЭŬ Œ3 y¥ŮъGe Ŭdĺf ŬеĹъŭ¥ŮΰεŬĹъĥĹdĹĹĺf Ŭdĺf dŮμŬ ŮŮŬĺf (71-73). Ѧ´α Œg ´ŬμĥЗŒĺf, ΰэŬĹdŮъĹĹъ ůŒ Œ´ĥμεœ ΰeəεŬΰdŮ´eg ´ŮμεəŬεbY3eg3 Ŭdĺ3 ŬъœзŮĝůd IgA ŬъŒůγεYĹγ3 ůŒ3 eμĥ əŬъŬdĺ3 ŬъœзŮĝůd IgG ŬъŒůγεYĹγ3 ůŒ ůY¥əœ əŬъ ůĹŬеiμŬ. ¢Ŭ εyGμэ ůεεŮμŬ ŬеĹъyůε ŬĹĹŬ ΰdd3eg3 ĥŬъе ´μεůΰεœμŮεĥfĺŮъΰeif ůəе´ei f) d εydeΰeg ŬdĺfŬъeůŬеĹγ´γůdf (immunoblotting) (50;74;75). ζ ŮŬdĺ εydeΰe ŬgŮε εŮъŮĹYĹŬъd ŬъŒůγεŬŒəе Ŭĥəμзůd Œg eμэŬъůεei ůŮ ůgэəŮъμεyзŮf ´μγĹĹзŮf Œg εəμеbœg. ŌŮůэ, ΰœŮĹŬъ d ΰgзŬĹĥŬdĺŬŬъŬъəi ůŮγf Ŭγз ŬъŒůγεYĹγ3 y3ŬъŒůĹγ3 ´μγĹĹůμ3 cagA əŬъvacA ůŮ´ŮμэΰŮí ůŮf эŬΰĹdŒůŬf, ΰgů´Ůγdŭf GγμofyəeGfəŬъůŮyəeGfŒg ůŒεYGeg (50;74-77).

qœəœŬΰdŮfeggμŮYΰdf

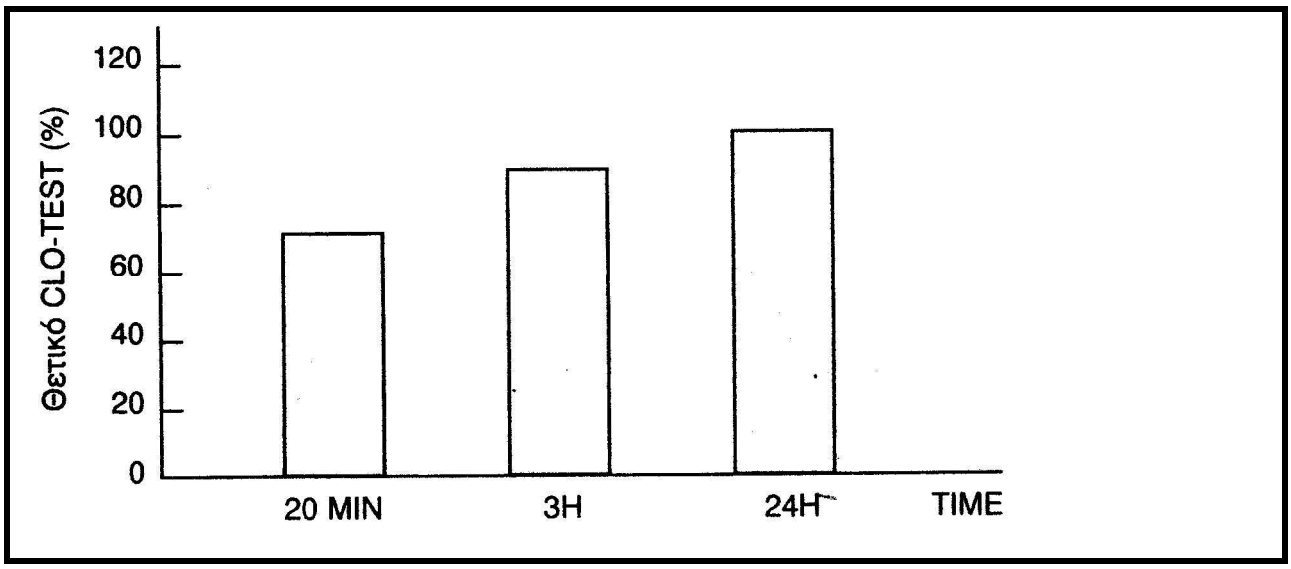
ȳ´γf´μеŬъŬíyμdd əŮ y3ŬŬĥ ĹĹŬ eŬμŬъŬdμsůŒъY Œg Ѧ´ ŮœŬъd ´ŬμŬъγэе ůŮεŮъY əŮf ´eůhŬdĺĹĹŮf Œg Ъəei εeg eggμŮYΰd. ÆŒ эŮъe3ĥf ŬgŮĥ bŬΰœз3ĹĹъəŬъe9ΰeəœŬΰdŮfeggμŮYΰdf эЭŬ Ŭdĺ3 ŬъœзŮĝůd Œg εəμеbœg:

¢ŬeŮdŮf εyde9ΰeeggμŮYΰdf

¢ эзγůŮĥĹĹμd ΰeəœŬΰdŬůŬdĺ3 əŬĹdэeμdŬ ŬgŮε ŮœŬъŒ эзγůŮĥ CLOtest® (Delta West Ltd.Canning Vale, Western Australia) (78). ¢ ΰeəœŬΰdŬŬgŮε bŬΰœŮĹĹъůŬdĺ3 Ŭъəə Ŭъе gμі εŬŒf Œg εyůŬůŮbedμœ Ůəΰeei gэμei ´eg ´ŬμeyGŮeeggμdŬůŬъ g´ĥůĹγεŬəŬъĹμgdμĥ ŬdĺfĺŬœĥədf ůŬъ ΰŮœŬdĺ Ŭəə Ŭъеf Œg pH. ζ yůŬ ůŒ bedμœ Œ´edŮĹŮdĹĹъ Œ əůŒŬĹŒ¥Gœ Ŭdĺf bœγdŬf (ůg3ædγgŬ ĥ Œ ¥3Ĺμeŭiі εŬ) ´eg əŬεbY3ŮĹĹъəŬĹY¥dĺ ΰ¥Yμəŭ3ŮĹdĺf Ŭ3ΰeůəĥ´důdd. ȳ ŬĹĹЗ ůŒ əůŒŬĹŒ¥Gœ g´Yμ9GŮъ Ѧ´ Œ e´eœ ´ŬμYъŮъ eggμŮYΰd, ŬĥŬĹ эœŮĹĹъ ΰ¥Yΰ´ΰůd Ŭdĺf eggμdŬf Œg g´eůĹμ εŬŒgfεŮŬĹgŬĥGμe3d ŬəəŬъе Œg Gμі εŬŒgf Œg bedμœg Ŭ ĥ ədĹμœe ´μegfəĥəəœe (79) (**Ѧəəĥ3Ŭ 7**). μ3 Œ əůŒŬĹŒ¥Gœ ΰŮ3 ´ŬμəœŬεbY3Ůъ Ѧ´ ŬĥŬĹŮ Œ Gμі εŬ Œg bedμœg ΰŮ3 εŮĹĹъYəəŮĹĹъ əŬъ´ŬμŬεyзŮъ ədĹμœe. ȳůe εŮъŬəi ŬĹμegf ŮœŬъe ŬμœůεĥfŮf ŬγЗ bŬəŬdμůαγ3 ůŒ

ꝑůſꝼſŰſꝼŸɢꝭꝫ, Ű̃ɧůɛ ɔɟɻɖɔɛɟɻɧŰ̃ɟŰɻɖŰ̃ſꝼɵɛ´ɛꝭůſŰſꝼɵſꝼ test. ¢ ŰꝼŸɔɜɤ ůɻɖ ɔɶɶŰ̃ſꝼɵůɡɜɐɖɤɡſůſŰ̃5õ, 20õ, 3 ɪ ɟ Ůſꝼ, ɘŰꝼɵ 24 ɪ ɟ Ůſꝼ. Æ̃ŮɛɖŰ ɛŮꝼɵÿŰ̃ɻ [81], Ű̃ſꝼ 100% Ű̃ſꝼg CLOtest© ůŮŰ̃ɟɟɪ ůŰ̃ſꝼggſŰ̃ɤɜ ɛ´ɛɶɤɜ ɖ ɖŰ̃ſꝼɵɧŰ̃ɻŰ̃Ű̃ůŰ̃ɻ ɘɛɶɤɜɖ ŮɶɢŮŮꝼɵŮɔɢɖŮɪɛŮɘŮꝼɵÿɟɔŮꝼŰ, ɐŰ̃Űꝼɜ ɖŰ̃ſꝼɵŸꝼɜŰ̃ɧſꝼ 24ɪ ɟ ɛg (**ÁꝼɵɧꝼɜŰ 8**). ¢ ŮſꝼŰꝼůɛɖɻůɖŰ ɘŰꝼɵ ŮſꝼɵꝼɵɧŰ̃ɻŰ̃Ű Ű̃ɻſꝼ ŭɛɘɛŒŮůɖŰſꝼ ɛgɟꝼŮſꝼůɖſꝼ ÿɢɛgɜ ŮſꝼŮɔɢɖŮɪ Ű ɧ ŭɵŸŭɛɟꝼŮſꝼ ŮɟꝼŮſꝼɜɖŰ̃ſꝼɵÿſꝼ ɛɛŸŭŮſꝼ ɘŰꝼɵ ɖ ɛÿɖɛŭɛſꝼ ɓɟꝼÿɖɖɘÛɜŰ ŮɶꝼŰꝼ´ɛɘꝼ ŮſꝼŰꝼůɖɻŰ̃ɻ ɘŰꝼɵ Űꝼůɛɘɛ [80]. Æ̃ŮŸɘɘꝼŮſꝼ ɛŮꝼɵÿŰ̃Ůſꝼ ɖ ŮſꝼŰꝼůɖɻůɖŰ ɘgɛŸɜɖɖɘÛŰ ɧ 89-98%. ş ɧɔɤ Ű̃ɻſꝼ ŮſꝼɘɛɘɖŰ̃ſꝼɢɟ ůɖɻſꝼ, Ű̃ɻſꝼ ŰŰ̃ɢꝼ Ű̃ɻŰ̃Ű̃ſꝼ, ɘŰꝼɵ Ű̃ɻſꝼ ŰꝼɟꝼɵꝼɵŸŰ̃ſꝼ Ű̃ɻſꝼ, ɖ ŭɛɘɛŒŮůɖŰ ŮſꝼŰꝼ Ůɶꝼ´ɛɘꝼ ŭɵŰŭůɛɛɤɜɖ ɘŰꝼɵ ɘŰŰ̃Ÿɘɘɖɛɖ ɧ´ɛg Ű ŰꝼɵŰůŰ̃ɻŰ̃ɵ Ÿɛůɖ Ű ŸɜŰ̃ɻůɖ, ´.ɢ. ɧŰ̃Űꝼ ɔɶŮŰ̃ɻŰ̃ɵ ÿɘɵɔɢɛſꝼ Ű ɛŰ̃ŰꝼɵůɛŰŰ̃ɵɧŰ̃ɻŰ̃ɻŰ̃ſꝼ ůɡɔɘɵꝼɟɛɤɜɖſꝼ Űꝼɵꝼɵ **ÁꝼɘɘɛɓŰꝼɵŰ̃ɻɟɤůŰꝼɵɛſꝼ** ɖŰꝼ Ű ůŰꝼſꝼ.

ÁꝼɘɘɧꝼɜŰ 7. Ÿ´ŸŰɤ ŭŮɶɛŰ: ŪŮŰ̃ɘɧ CLO test® Ű ɧ Ÿɟɟɪɤ ůŰ̃ſꝼ ɛŮ12ŭŰɘŰ̃ɢɘɘɧ ÿɘɘɛɖ. Æ̃Ů´ Ůɟɑ Ű̃ɤ ůɖ ´ɛg ɖ ɓɶɛɣɖŰŭŰɘ ´ŮɟɘɘꝼŰɛɓŸɜŮɘ**Á´**, Ű̃ſꝼ ɖɟɪ ɛŰŰ̃ſꝼg ɓɛɖɟɶɛg ´ŮɟꝼŰꝼɛÿɜŮɘɛɖŰ̃ɟɘɛ (Ÿɜɤ ŭŮɶɛŰ)[79]

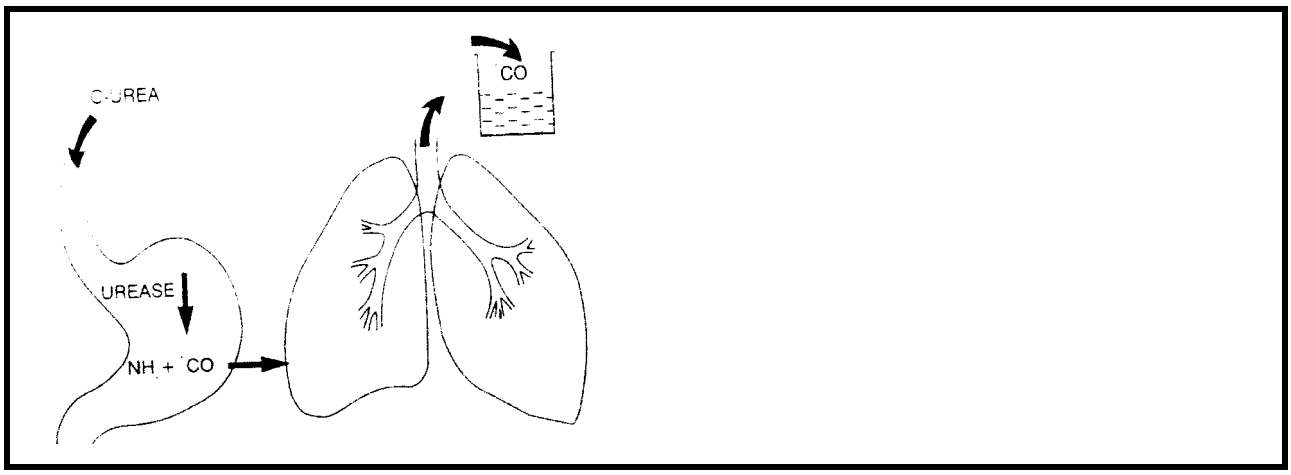


Ásøfjæ 8. Ūůűøfjűűűűűűg CLO-test, ůűøggű Ūøűůűøœøggű œjfjøggű, Ū f Ūjjı ůűøggű ɛŮdŮűøe øŪøøøyjɔŮøŪɔøŪ**Á´** .ȷ ´fj Ůűæ Ůjɔ Ūůd Ūůɤ 3 Rokkas øŪøůgæ 1999 [81].

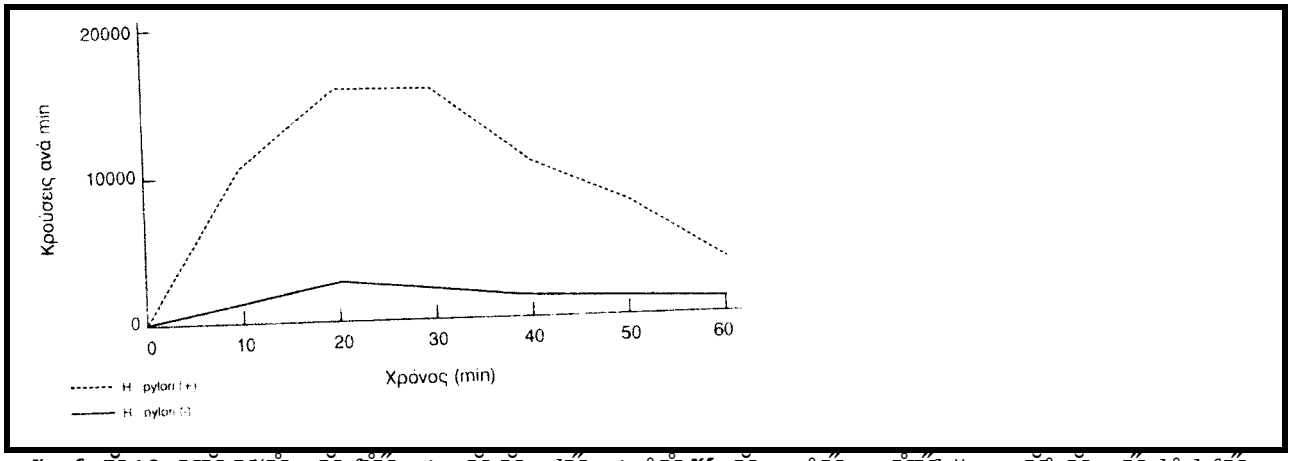
ɀ yd ø ŭ œ g Ůø ´ æ Ůø ɛ y æ œ g CO_2 (Breath test)

¢d ɛyd ø ŭ œ ´ ŮjøyɔjŪɣŮɔøŪ´jı Ůűűűœjɣ Graham øŪøůgæ. [82-84] øŪøbŪůœŮŰŰøůűø ɔŮøœæfjg fjŮø d œgjŮŸůd ű ø g **Á´** ŭøŮů´Ÿ Ůűæ œgjdŪ´ŮjɣɔœæŰŰg NH_3 øŪø CO_2. ¢œ ´ŮjŭøfjɛŮø œ CO_2 Ū œjjœűŸŰŰøůűűůgæyœŮøŪŪ f ŭø ůűfjɛŭœ øŪøŪ œbŸøøŮŰŰøøi jøŪŪ f ŭø ggű´æŮiɛœæŮg(**Ásøfjæ 9**). ¢œ Ū œbŭøøfjɛŮø œ CO_2 ɛ´œjŮůæŪɛŮŰjdűůɛŮœjɣɛŭŭø ɔjŭűdŪɛŸœŭg, Ůűfjůœæ d œgjdŪyœŮø ůdɛŭødŮůɛŮ ^{13}C e ɛŮbeta counters, Ůűfjůœæ d ůeɛŭøůd yɔøŮɛŮ ^{14}C [36-41].

ɀ ŮøŸøœ ´øŮø æyøűdɛŪ űdg ɛŮűfjŭœg Ůøøŭøŭøæ ɔŮøœæfjg fjŮø Ůøøŭøŭæŭøűd, øŭűfjůœæ ŭŮø ´jœfi´œdyŰŰøűd, øeɣd bøøɣɐæ øŭø ůœŮŰøøŸɔjeɔœjd, ɔøŭűůůŮ´Ůjdűŭůd i´Ůjæddg ɛøœjœbαæ ůŭø ɔŮůŭjøfj bøŮæœɔfjœ dŮŰøœ´œŮűŰøɛyůŭůŮ 20 øŮűŸ´Ůjdœgæ (**Ásøfjæ 10**). ŪjœůűűyjŮŰŰø ɔøŭŮůqŭdɛøæøɔøøyg yjŮgæŮg, yjŮgæŮg yjŮøyɔœœg Ū œŰŰøůɛŮŰøfjűdŮŰg dŮjŭ ŮűŭŮg øø´. ŌœŮø´œøi øŭøe ŮgŮŭűdduůdŭ(90-100%) øŭøŮŭøfjűűŭ(89-100%). ¢œŮŰøŸɛŮæ æŮøűŮøɛŮŰŰűŮœŮøœ Ūøjœfjg ŰŰœæœɔøfjg Ůæ´øqɛfjg ´œg Ū ŭøŰŰűŰŰø, qŭαg fjŰŰæ ´jfjøŮæŰŰø ɔøŭ ɛyŰjdůd ŭœg ^{13}C (mass spectroscopy) øŭø dɛøœjɐ ŭfjůdjŭŭæŮæyjɔŮøŭg´œg Ū œŭœŮæœ ^{14}C ůűd œjdůæœ´oœi ɛŮæd ŭfjůd (2-5 ɛCi) [82;85;86].



Άσκηση 9. Εξετάστε τον τρόπο με τον οποίο η ουρεάση του *Η. pylori* μπορεί να χρησιμοποιηθεί για τη διάγνωση της λοίμωξης από το βακτήριο αυτό.



Άσκηση 10. Η ουρεάση του *Η. pylori* και η ουρεάση της φασολιάς έχουν παρόμοια δομή. Συγκρίνετε τη δράση της ουρεάσης του *Η. pylori* με τη δράση της $^{14}CO_2$.

3. [illegible]

[illegible] [87-90]. [illegible] DNA [91]. [illegible] MALT-[illegible] (Mucosa-Associated Lymphoid Tissue-lymphoma) [illegible] [92-95]. [illegible]:

- [illegible],
- [illegible]
- [illegible].

[illegible]

[illegible]

[illegible]:

- [illegible] BabA2 [illegible] SabA [illegible] [96],
- [illegible] cag [illegible] IV [97] [illegible]

- ɛɔəgŰŰŰĵɛŰɛɜɛŰĵɾ cagA əŰɔ vacA ´ɛg ɛŰŰŶŰŰɜ Űůůɛüɦ ŰɛggĵůŰŰɔŰůŰĵsɔŶŰɾsŰdəɔŰɔŶ əi-ŰŰŰĵŰ Űɾɛĵgdɛɛɛgɜ ɛdɢŰɔɔůɛɛi-gɾɛŰŰŰɔɤɔɛgĵ ŮɔüɛəgŰŰŰŶĵsɔg ůɛɛŰŰɛgĵəŰɔŰɾɛɛɣɜɤgĵ Űɾɔűĵɛi-ɜ ůŰŰɜ əgŰŰŰĵsɔɛ ɛɛɛɔɦjůŰŰůd [54].

Ŧĵɤ ŰŰŧɜŰĵgˊĵɛůəɦəədůdgĵ (BabA2, SabA)

ȷ ɜ əŰɔ d ´əŰɛɜɦjŰŰŰŰ Ű𝒙ɜ 𝑨´ ŬɔɛɢɜŰŧɛɜŰŰɔ ůŰŰ ɓəɣɔɜd, ɣɜŰĵg ɛɔəĵɦjgĵ ŰĵɾsŰɛɦjgĵ Űˇɦ ŰgŰŰŶ ´ĵɛůəɛəəŶŰŰɔ ůŰŰ ɔŰůŰĵsɔŶŰɾsŰdəɔŰɔŶ əi-ŰŰŰĵŰ ɛɣůɤ Ű𝒙ɜ Ůɔűĵ.ŰɛɦjɛŰɔɤɜ Űˇɦ ŰŰ ŰɾsŰɛəɔŰ ŰɔŰɛɦjɔɤɜ Ű𝒙ɜ ɛɛŶűɤɜ ŰɛŰŰɛg.¢Ű´əɣɛɜ ůdɛŰɔŰɛɔŶŰˇɦ ŰgŰŰŶůɔŰɔŰŰŰ Lewis b [98] Ű𝒙ɜ ɛ´ɛɑɤɜ d ɣəűĵ.Ůůd ůŰɛ ůŰɛɛŶɢɔ ůgɜüɣŰŰɔ ɛŰŰgɜdɛɣɜɛ Ű ɛɔəɔůɛɦ ɛŰ𝑨´. ò əəŰ ŰɔŰɛɦjɜŰ, ɦ´ɤgĵ ŰŰ Lewis x əŰɔ ŰŰ Lewis a, Ůˇůdgĵ ůgɜŰŰɔɛgɜ ůŰĵɜ Ůɨɜdůd ŰɛɢɓŰɔŰĵɾɜüɔŰɔɛi- űɛɾŰɛɢɢ Ůɔəə-ŶůŰ ´ɛəi- ɢŰɛdəɦjŰŰĵɛ ´ɛůɛůŰɦ [99-101]. ¢ ´ĵɛůəɦjəədůd ůŰŰ ŰɔŰɛɦjɜŰ Lewis x ɔɛŰŰŰɔ ɛɣůɤ Űĵgĵ ´ĵɤɤŰŰɜdgĵ SabA, Ůɔəə-ŶŰɛ əi-ɾĵsɛ ɓŶĵɛgĵ Ůĵ.Ůg3dŰɔə-ŶůŰɓŶůŰĵəŰůŰĵɜ ´ĵɤɤŰŰɜd BabA d ɛ´ɛdŰ ŰɛɢŰɔɤɜ g´Ůɨdgɜd ɔəŰ Űĵɜ ´ĵɛůəɦjəədůd ůŰŰ ŰɔŰɛɦjɜŰ Lewis b [102]. ¢ ɛŰɔŶəd ůdɛŰůdŰ Ű𝒙ɜ ŰɔŰɛɦjɜɤɜ Lewis b ůŰĵ ɓŰɔŰĵɾɜüəŰɔə ´ĵɛůəɦjəədůd g´ɛüdəɤ ɜŰŰŰɔ ŰˇůdgĵŰˇɦ Ű𝒙 ɔŰɔɛɜɦjgĵ ɦjŰɔ üəŰɔɛɜɜüəŰɔŶ ´ɛɜŰɛɔəŰ ´ɛg Ůɔűĵ.Ŷɛɛgɜ ŰɔdĵɩˊɜŰ ŰɔŰɛɦjɜŰ Lewis b ŰɔŰŰĵůůɛgɜ ɓŰĵ.əŶ ɔŰůŰĵdɛüŰəŰɔ ɔŰůŰĵsɔŶŶəəd. ŤəɜɔəŶůŰŰɔɣgd ´ɛg ɣgɛgɜ Ű𝒙 ɔɛɜɛüɔɜ BabA2 əŰɔ Ůɔűĵ.Ŷɛɛgɜ əŰŰĵɛgĵɔɔɛ ´ĵɤɤŰŰɜd BabA, ɣgɛgɜ ůgůɢŰŰůdŰɩɛŰŰgɜdɛɣɜɛ əgŰŰŰĵsɔɦj ´ɛəəŰ əŰůɜŰůɛɦj Ű𝒙ɜ ŮɾsŰdəɔŰəɩɜ əgŰŰŶĵɤɜ əŰdɩ gəŰɔ Ŭgɜdɛɣɜɛ əɑügɜɛ ɔɜŰŧűŶɜůd üɤüŰɔŰüŰɔŰĝəɔəɛi- yəəɛggd, ɔŰůŰĵsɔɛgŰŰĵɛűdŰg, ŮɜŰĵsɔɛgɛŰŰŰ əŰůdŰgəŰɔ ɔŰůŰĵsɔɛi- əŰĵəɑɛg [103].

Ƒi-ůŰŰɛŰɣəəĵsůdgŰĩ´ɛg IV (ɜdůɑüɔɛ´ŰdɛɔɣɜŰɔŰgˊ cag)

¢ɛɜdůɑüɔɛ´ŰdɛɔɣɜŰɔŰgˊcag ŰɛŰŰɔůŰŰɔŰˇɦ´Űĵɑɛg 31 ɔɛɜɑüɔŰŰŰɛ´ɛdŰŰɑɔŰɔg´Ůɨdgɜ ŰɔɛŰŰŰd üdɛɛɢĵɔdŰ Ůɜɦjgˊĩ´ɛg IV ŮəəĵsŰɔəi- ůgůŰɛŰŰɛg, Ű𝒙 ɛ´ɛɑɛ ɣɢŰɔ üŰɔɢdŰɑɦjŰɔ ɛŰŰŰĩɣĵŰɔ ´ĵɤɤŰŰɜdgĵ ɦj´ɤgdɛəŰŰĵɛŰ𝒙ɛɜdůɑüɔɛ cagA (əŰɔŰgŰɛ əɤüɔɛ´ɛɔůŰŰɔŰˇɦ Ű𝒙 ɜdůɑüɔɛ cag) ɛɣůŰůŰŰ ɔŰůŰĵsɔŶŰɾsŰdəɔŰɔŶəi-ŰŰŰĵŰ [104]. ÁəŰɦjgˊŰdgˊcagA, Ű𝒙 ɜdůɑüɔɛ´ŰdɛɔɣɜŰɔŰgˊcag ɛŰŰŰĩɣĵŰɔəŰɔ´ŮŰɑüɛɔəgəŶɜůgˊŰ𝒙g əgŰŰŰĵsɔəi- Ű𝒙ɜɢɩ ɛŰŰɛgˊŰ𝒙g 𝑨´, ɛɔɛ´ɛdůgˊ, ɛŰŰŶŰdɜ ŰɔŰɔɜɩĵ.sůɤ Ű𝒙ggˊŰˇɦ Ű𝒙 ŮɔűɛəgŰŰŶĵsɛ ůi-ůŰdɛŰŮɔŰɛĵdůdgˊŰɤɜ Nod ´ĵɤɤŰŰɩɜ, ŮɔŰĵɔɛ´ɛɛəi-ɜ ɛɣůɤ Ű𝒙g ůgůŰɛŰŰɛgˊ Ű𝒙g ɛŰŰŰɔĵ.ŰŰĩəɔəi- ´ŰĵŶɔɛɜŰŰ NF-kB Ůdɜ ɣəəĵsůd ɢdɛŰɔɛŰŰɔŰɔəɩɜ ´ŰĵŰɔɦjɜŰɤɜ, əgĵɑɤgˊ Ł3ŰŰĵəŰůəɑɛdgˊ 8 (IL-8) [105;106] Űˇɦ ŰŰ ɔŰůŰĵsɔŶŰɾsŰdəɔŰɔŶəi-ŰŰŰĵŰ. ¢ɣŰɛɛɛə´ŰĵŶɔɛɜŰŰgˊ əŰŰŰůdi-ɜɛgɜ Ůdɜ əgŰŰŰĵsɔɛ Űˇɦəĵsůd ɣɜŰɔŰɔ Ůdgˊ ɔɛɑɤɜdgˊ, ŰɔɣɔɢɛɜŰŰĵgˊ Ůdɜ ɢdɛŰɔɛŰŰɜdŰ əŰɛűɛəgŰŰŶĵɤɜ əŰɔ ɛgüŰŰŰĵɦjűɔɔɤɜ ůŰɛ ɢɦjsɛ. Á´ɜüdɛɛɛəɛɔɔəŶ, d ´ŰĵɛgůdŰ Ű𝒙g ɜdůɑüɔɛg ´ŮdɛɔɣɜŰɔŰgˊcag ůŰəəɛɔəŶůŰŰɔɣɢdˊ𝑨´ ɣɢŰɔůgůɢŰŰůdŰɩɛŰˊŰĵsůŰŰɔəŶɓŰĵi-ŰŰĵdgˊɔŰůŰĵsɔɛgˊ űəŰɔɛɛɜɛgˊ, Űgɜdɛɣɜdgˊ ɣəəĵsůdgˊ ɢdɛŰɔɛŰŰɔŰɔəɩɜ əgŰɛəɛɔɩɜ əŰdɩ gəŰɔ ɔŰůŰĵsɔɛgˊ əŰĵəɛɔɛɛɣɜŰůdgˊ [90;107]. ȷ ɜŰɔŰĵŰɛŰɤgˊŰĵgˊŰĵgˊüĵŶůdgˊŰɛg ɜdůsüɔɛg´ŮdɛɔɣɜŰɔŰgˊůŰĵɜ ŰɔŰĵɔɛˊɛdůd

Ûíx ɜ ɛdɋGÜɜšůɛɪ ɜ ű¬Ùɔɛɜɜɐɡʃ, ɜůɋgʃɹɐ ɡdɛÙɜɜÚÜɔÙɜɜɐ ŭʃ¬Ýůd ůÚÜ ɜgŭÙÚÜʃɦűɜɔŬ ÜůɜÙůɜÙɔ¬ɣɜÜʃɡ ÙɆ¬ɜɣɜɜ ´ÜʃÝɔɜɜÚÜʃɡ Úɜɡ **Á´** d *Hp*-NAP (*H.pylori*-Neutrophile Activating Protein) d ɛ´ɜdŬ ɛÙÚÜűɣʃÙÚÜɔ´ÜʃÙɔgÚÚÜʃɜɔÝůÚɜ ɡɦʃɜɜ [108;109].

TgűűŭʃɛűɜɔɜůʃgcagA ɔŭɔvacA

Á´ ɜűdɛɜɜɔɜɔɔÝůÚɜɜɡÙůŬɔÜÚÜűÙɜɔɜi ɜgɜ ɦŭɔd´ÜʃɜgůdŬůÙɔɔɜɜɔÝůÚɔ¬ɣɡd ɔgÚÚÜʃɜɛÚɜɜɔɜɪ ɜ ɦ´ɤʃdd cagA ɔŭɔůgɔɔÙɔʃɜɛɣɜɤ ɜ g´ɜŭí´ɤ ɜ Úđʃg vacA ůgɜűɣÙÚÜɔɛÙ Ügɜdɛɣɜůʃg Ükɔɔɜɔɪ ůÙɔʃg Úɜɡ ɔÜůŭʃɜɔɜi ÙɆɜdɔɔɜɡ [97]. ¢ ɛÙɔ¬ɣÚđ ɔɜŬ Úđ ŭɜÜɔ¬ÙɔɔÜɜůd Úɜɡ ɛdɋGÜɜšůɛɜi ŭʃ¬Ýůdʃg´ÜʃÜɔɦɜŭÚɤ ´ÜdɜɔɣɜÙɔÙʃg Úɜɡ **Á´** ɦ´ɤʃdɜɔ´ʃɤÚÜɜÙʃg cagA ɔŭɔ vacA ɔɐÙÚÜɔ ɔgʃɹɐʃůd *in vitro* ɔgÚÚÜʃɜɔɪ ɜ ůgůůđɛÝŭɤ ɜ ´ÙɦʃÜɛÜŭɔɔɐʃg ɔɜɐɛɤɜdʃg **Á´** [104]. ¢ ű¬ÜɜɔɐŭÚg´ɜɔɐ Üɔɔ¬Üɔɐ ŭí´ɜɡ Ügɜdŭɔɔɜi ´ÜʃÝɔɜɜÚÜ´ɜɡ ´ÜʃÜŭđʃÙđÚÜɔůŭđ ɛɜʃűɜɔɜɔdŬ ɔÜɔůŭđ ɔɜɔdŭɔɔɦŭđÜŬ ŭɤ ɜ ɔÜůŭʃɜɔɪ ɜ Ůɜɋdɔɜ¬Üɔɪ ɜ ɔgÚÚÝʃɤɜ ɛÙÚÝ Ü ɦ *in vitro* **Á¬ɔɜɔɛbÜɔŭđʃɜűɜÜɔɐɐ** ɛɦɔgɜůd, ɔɜɤůŭí ɔÜɔ ɤɡ «ʃÜɛűɛÙɔŭɐɐɡ űÜɔɜɦŭɡ´ɜɡ» (hummingbird phenotype) ÙɔɜÜɔ ɣɜŬ ŭɣŭɛɜɔ ɡÜʃÜɔŭđʃɜůŭɔɜɦ ´ÜʃÝŭÙɔɐɛŬ´ɜɡ ÜɜɜÜůÙɔɜi Ùɔ ŭđ ɓɔɔɜɔɔɜɔɐ ůdɛÜůdŬ ŭđɡ´ʃɤÚÜɜdɡ cagA [110-113]. ¢ ÙɛűÝɜɜůd Ûíx ůgɔɔÙɔʃɛɣɜɤ ɜ ɛɔʃűɛɔɜɔdŭɔɔɜi ɜ Üɔɔ¬Üɔi ɜ, ůɡÚÜůdđɔÙɛŬ ŭđ Ügɜ ÜɜűɛɔgÚÚÝʃɜŬ Üɜɔɡɜůgůůd űɤůůɛʃgɔɔɤɛɣɜdɡ ´ʃɤÚÜɜdɡ cagA d ɛ´ɜdŬ ŭʃŬ ɤɡ ɣɜÜɡ Ŭɛʃʃgdɛůŭɔɦɡ Ügɜdŭɔɔɦɡ ´ÜʃÝɔɜɜÚÜɡ [114]. ¢ cagA Üűɛɜɪ ɛ´ÙɔůÚÜ ɔÜůŭʃɜɔÝŬůdɔɔÜɔ¬ɔɜɪ ÚÚÜʃŬ, űɤůůɛʃgɔɔɤ ɜ ŬÚÜɔŬ ɦ ɔɜɔ¬ÝůÙɡ ŭđɡ ɛɔɔɛɔɣɜÙɔÙɡ Src Úɜɡ ɔgÚÚÝʃɜɡ ůÙŬɛɜɔɛɜ¬Üŭʃɜůɔdɡ (Ʃ) ´ɜɡ ´ÙʃɜɔŬɛbÝɜɛɜÚÜɔůÙ ŬÙɜÜɔŬɔŬɛbÜɔɦɛůɜŬ´ŬÙŭɜɔ¬ɛÚđbŬ ŭđɡ ɛɜʃűɛɡ ÁPHJ ʃ (ɔɔɛgÚÜɛɔɦ-´ʃɜɔɔdɡ-ůɛɔɔÙůɔɔdɡ-ŭʃɜůɜÙůɔɔdɡ-ÜůɔŬɔɔdɡ) [115-118]. ʃ ɜÝɔɛɔŬ ɛÙ ŭđ ´ŬÙŭɜɔ¬ɛ ÜɔɔdɔɛgɡdŬ´ɜɡ Üɔɛɔɛgdůů, ÜůÜ¬ ÜŬ ɛɛÚbŬ¬ɣɡɛgɜ ɛʃɜůdŬůůÜɔ ÁPHJ ʃ -ʃ , ÁPHJ ʃ -db ɔŬɔ EPIYA-C [119-121]. ʃ ´ɦ ɛÙɔ¬ɣÚđ ůŬůÚÜɔ¬ɣɡd **Á´** ´ɜɡ ´ʃɛɣʃɡɛɜɜÚÜɔŬ ɦ cpgÚɔɔi ɡɔŬɔʃ ůɜŬÚɔɔi ɡ´ɔdɡůɛɔi ɡ, ŭɜŬ ɜůŬí dɡɔŬɦÙɔdůgɜŬʃɜ´ÚɔɔɐɔÙɔ ´ɔŬɔɜɣdűdŬ (95%) Ûíx cagA-dÚÚɔɜɪ ɜ ůÚÜɔÙůɪ ɜ ŭɜÜdɣÚÜɔ 3-4 ɛɛÚbŬ ŬÍ´ɜɡ EPIYʃ ůÚɛ ɔŬʃɓɛɜg-ÚÜɔɜɔɦ ÝɔʃɛɛÚđ cagA ´ʃɤÚÜɜdɡ, ůÙŭɜÝÚÜɜd ABC ɐ ABCC. ʃ ɜÚdÙÚÜ, ůÙɣɜŬɛɜɔʃɦ ´ɛůɛůŬɦ ÚđɡÚÝɜdɡ Úɜɡ 3-5% ɛ Ŭʃɜdɛɦɡ Ûíx EPIYA-C ɛɛÚbɤɜ ´ɛɜɔɔÙɔŬ ɦ 1-4 ɔŬɔɛÝɔɜůÚÜ ´ʃɦůűŬÚÜ ŭÙŭɛɛɣɜŬ ŭÙůɑɜɛgɜ ɦÜɔ ůÚÜɔ¬ɣɡd **Á´** ´ɜɡ ´ʃɛɣʃɑɛɜɜÚÜɔ ŬɦÜůdÙɔÙɡ ɛÙ ÜŭÙɔɛɔŬʃɔɔɤɛŬ, ´ÜʃɛgůɔÝɑɛgɜ Ügɜdɛɣɜɛ Ŭʃɜdɛɦ ÙŬɔÜɔɔɛɣŭɤɜ Úđɡ ɛɛʃűɐɡ EPIYA-C ůÚđ cagA ´ʃɤÚÜɜd [122-125]. Á´ůdɡ, ÙůʃɹɐɛŬÚÜŭɛɡ Áʃɔ ŬůÚđʃɜɔɡ Pasteur ůÙůɨɜɛɔɛ 135 ɔŬɔ´ɔɣɜɛɜ ɔɔɜɜɔɔɜɪ ɜ ůÚÜɔÙɑɪ ɜ **Á´** ŬɦÜ´ŬɔŭɜÝɔŬ Ùɛɔɔɐɔůdʃ, ɣŭÙɔɔŭɔ ɦŭɔÙɛűÝɜɜůd´ÜʃɜůůɛÚÜʃɤɜ Ûíx 3 ÙŬɔÜɔɔɐɣÙɤɜ Úđɡ ɛɛʃűɐɡ EPIYA-C ŭɜŬ ɜůŬí ɜÚÜɜŬɔ ŬɛɔɔÙůɔŭɔɔÝ ůÙ ůÚÜɔ¬ɣɡd ´ɛg Ŭɛɛɛɜɪ dɡɔŬɔ ŬɦÙɛɔɔɜůdʃɔŬɔɦɛɔŬɦ ´ŬɔŭɜÝ[117;122;123]. ¢ ´ÜʃÚÜɛʃdůdÜgÚɛ g´ɛŭdɔɪ ɜÙɔ ɦŭɔ ÙɔŭÙɛɛɛɣɜɤʃg dɡ ´ʃɛůdɛɔdɡ ÙŬɔÜɔɔɐɣÙɤɜ Úđɡ ɛɛʃűɐɡ EPIYA-C ůÚđ cagA ´ʃɤÚÜɜdɡ ɔÙɛɔɦÝɜÙɔ ɡɪʃŬ ÜʃɔɦÚÜʃŬ ɔŬÚÝ Úđɔ Ùɔdɔɜɔɔɤůdɡ, ɔÙɔɛɜɦʃdɡ´ɜɡ ɛ´ɛʃůɔɜŬ ÙɔdɔÙɔÚđ ŭɜÜűɛʃÚÜɔɜɐ ɔɔɜɜɔɔɜɐ Ùɔŭɐɔɤůdɡ Úđɡ **Á¬ɔɜɔɛbÜɔŭđʃɜűɜÜɔɐɐdʃ** ɔɛɛɤɜdɡ ůÚɔʃdŭi ɛ ÜgÚÝdɡ dɔɜɔɔÙɔɔÝdɡ ɛɛÝŭůdʃ. cpɔŬ ɜůŬí dɡɔŬ

ÙĕůdţƒĥŮĕďţ ï´ŮĵɜďţÙĵĕůůĕŮŷĵɤɤɜ ĕĕŮŰĎɤɜ ű̆ɤůůĕĕĵĝəœɤůdţƒ EPIYA ůŰŰţɜ cagA əŮəĥĝĕəŮĕ ĕĕəĵĕĕƀŮəĥ ű̆ĕĵÙŰĕ ŮĕĝA´ ůŰĕ ɔŮůŮĵĕəĥ ƀəŮţɜĕĕɔĥɜĕ, ůĕŮŰŰĕŮŰŰəĕÙŮĕ ƀŮŰďĕĥ ƀŮĵï ŰŰţŰŰƒəŮə ŮţŮĵɔĕï ŭŷŮŮŰŰţŷĥŰŰţŰŰƒ ŰŰţƒ ŮţĕŮ ŰŷĕƒďŰůůŮŰƒ ĕţĥɜəŮŰƒ ɔŮůŮĵďŰůŮŰƒ ůŰĕ Ɏɜŭĵĕ ŮůďŮţɹɜ ĕÙ ĂəəœƀŮəŰŰţŷŭĕŮəœ əœœɤɜďţ. ¢ ůĕůĕĕɏŰŰůďţ ŮĕĝŰĕ ŮəɜŮəə ůďţĕŮţŰĕəœ ůŰŰ ´ŮĵĕůŰŰŰĕəɎ ŭɤŭŮəŰŮŭŮəŰĕĝəœĕï əŮəəœĥŰŰĵĕ ɔŮůŮĵĕəĕï ɣəəĕĝƒůŰĕ ŭŮəœĕÙŰɤɜ ŮůďŮţɹɜ ´ĕg ŮţŮŰɎůďďəŮţɜ. qœŮŰíŮɜŮŰŰəɜ, əœɾ ĥɜ, ĥŮĕɣɜŮƒəï ĵĕĕƒ ƀəœəœɔœĥƒĵĵĕĥəœƒ ŰŰţƒ cagA ´ĵɤɤŰŰţɜďƒ ε´ĕĵŮůɜÙŮɜŮŮəŮďţ εŰŰŰƀœəœ ŰŰţƒ əgŰŰŰĵĕəœƒ εĕĵű̆œəœɔďŰƒ əŮəď ĕŮŶĵɤɤůď Ůɤɜ ůŰŰţœĕůĕĝɜŭɣůĕɤɜ εŰŰŰţï Ůɤɜ əgŰŰŰɎɤɜ ŮĕĝɔŮůŮĵĕəĕï Ůɹďďəœĕĝ. ò əəɤůŰŰ ɣĕŮţŮůŭŮĕďŮůĥŮĕďţ cagA ŮƀəďəŮɹŭɣɎ εŮŭï ƀŮŰŮĕĵĕəɣƒ ´ĵɤɤŰŰţŰƒ ŰĕĝəgŰŰŰĵĕůəŮŮĕï, ŰŰţɜ ZO-1 (epithelial tight-junction scaffolding protein) əŮəŰŰţɜ JAM (junctional adhesion molecule) εŮŰ ĕŰɣəŮůεŮŰĕɜ ɣəŮĕ´ĕ ůĕďεŮŰĕůεĥ Űĕĝůĕε´əĥəĕg ůŰŰţœĕůĕĝɜŭɣůεɤɜ ůŰĕ ůďεŮœ ŰŰţƒďŮəŰŰţɹɜŭţŮəɐƒ´ĵĥůŭŮůďƒəŮəŮŰíŰŷĵĕg ŰŰţɜ ŮəɐəŮəɐ ůŰŰţ ůï ɜďŮůď əŮəɐŮĕĕgĵɔďŮĕĝ ůgε´əĥəĕg Űŷɜ əĕĵgűŮɤɜ ůgɜŭɣůεɤɜ ůŰŰəï ŰŰŰĵŮ (126-131).

Õ ɜŮƒ Ɏəəœƒ ƀŮəŰŰţɹɜŭţəŮəĥƒ ´ŮĵɎɔĕɜŰŰƒ ´ŮďĕɔɣɜŮŮƒ ŰĕĝA´, ŮœŮəď ´ĵɤŰŰţɜď vacA, ď ĕ´ĕďŮ ´Ůĵĥəœ ´ĕg ůgɜŮɜŮŶŰŰəůŮĥəŮ ŰŰŮ əɐœĕɐɎůŰŰəɣɣďɜď, εĥɜĕ ůĕĝ 50% ŮgŰï ɜ ´ĵĕəĕŮəůď əgŰŰŰĵĕəœ əŮŰŰůŮĵĕűœ εŮůɤďεŮŰĕůεĥ əŮĕĕŰĕ´ɤɜ (vacuoles). ĵ gŰĥ ĕűŮəɐŮŰŰəůŰĕ ɔŮəĕɜĥƒĥŮəď ŮəəœďɜŮɤďŮŰţƒď vacA ŭĕŮŰíɣĵŮəεŮŰŰəï ůŰŰəɐŮďɹɜ ĥůĕɜ ŰŰíĕĵɎŮţɜ ŮĕŭŷɎůďď ´Ůĵĕĕɤœ (m region) əŮəŰţɜ ´Ůĵĕĕɤœ s (s region) εŮŰţɜ ï´Ůĵɜďţ g´ĕŰí´ɤɜ m1, m2 əŮə s1, s2 ŮĕŰůŰĕĕɤŮ (132-138). ĵ ´ĥ Űţɜ εŮəɣŰţ Űɤɜ ŭĕŮŰíĕĵŮŰĕəɹɜ g´ĕŰí´ɤɜ ´ĵɤəï´ŰŰəĥŮəĕ ´əɣĕɜ Űĕĕɜœəĥƒg´ĥŮĝ´ĕƒ ŮəɐŮəĕ s1m1, εŮůŮďŮƒŰĕĕɜœəĥŰţŰŰƒĕ s1m2 əŮəəœĥŰŰĵĕ Űĕĕɜœəĥƒĕ ůgɜŭgŮůεĥƒ s2m2, Ůɜɹ ĕ g´ĥŮĝ´ĕƒs2m1 ŭŮɜ gűœůŰŰŰŰəɜ ŁŮ ůgɜŭgŮůεĥ εŮŰĕ «ĵŮεűĕŮəŭɣĕ űŮəœĥŮĝ´ĕ» ´ĕg ŭďεɐĕgĵɔŮďŰŰəŮ ŮĥŰţ ŭŷɎůďď Űţƒďƒƒƒ cagA, ŰŰŮəï ŰŰŰĵŮ´ĕg εĕəï ɜĕɜŰŰəεŮůŰŰəɣɣďď ŮĕĝA´ əŮəŰŰŮĕ´ĕďŮ´Ůĵɐɣĕĕgɜ ´ĵɤŰŰţɜď vacA εŮɐůĥŮĝ´ĕ s1m1, ŮɛűŮəœĕgɜ əŮəĕŰĥ´ɐŮ əŮəŮəůŮďεŮůεɣɜď ŮĥŰ´Űɤůďƒ. ĵ ɜŮœďŰŰŰ, Ůɤɐŭďεɐĕəœɔəɐƒg εŮəɣŰŰƒ ůŮ əəɐœəɐƒ ůŰŰəɣɣďď ´ĕg ŭŮəŮgŮŮœĕɜŰŰəŮ εŮŮgɜďεɣɜď ɔŮůŮĵĕəɐ ƀəɐƒƀďď, ŭŮœĕɜĕgɜ ĥŮĕďţ ŮĕĝůďŮŰƒďƒƒ cagA ´ĵɤŰŰţɜďƒ, ůgɜŭgƒɛŰŰŰəŮ εŮŰƒɜ ´ŮĵĕgůďŮ ŰƒďƒƒŮəŮəŮĵĕəï ĕĕĵű̆ĕgŰƒďƒƒ´ĵɤŰŰţɜďƒg vacA (s2m2 g´ĥŮĝ´ĕg) (132-143).

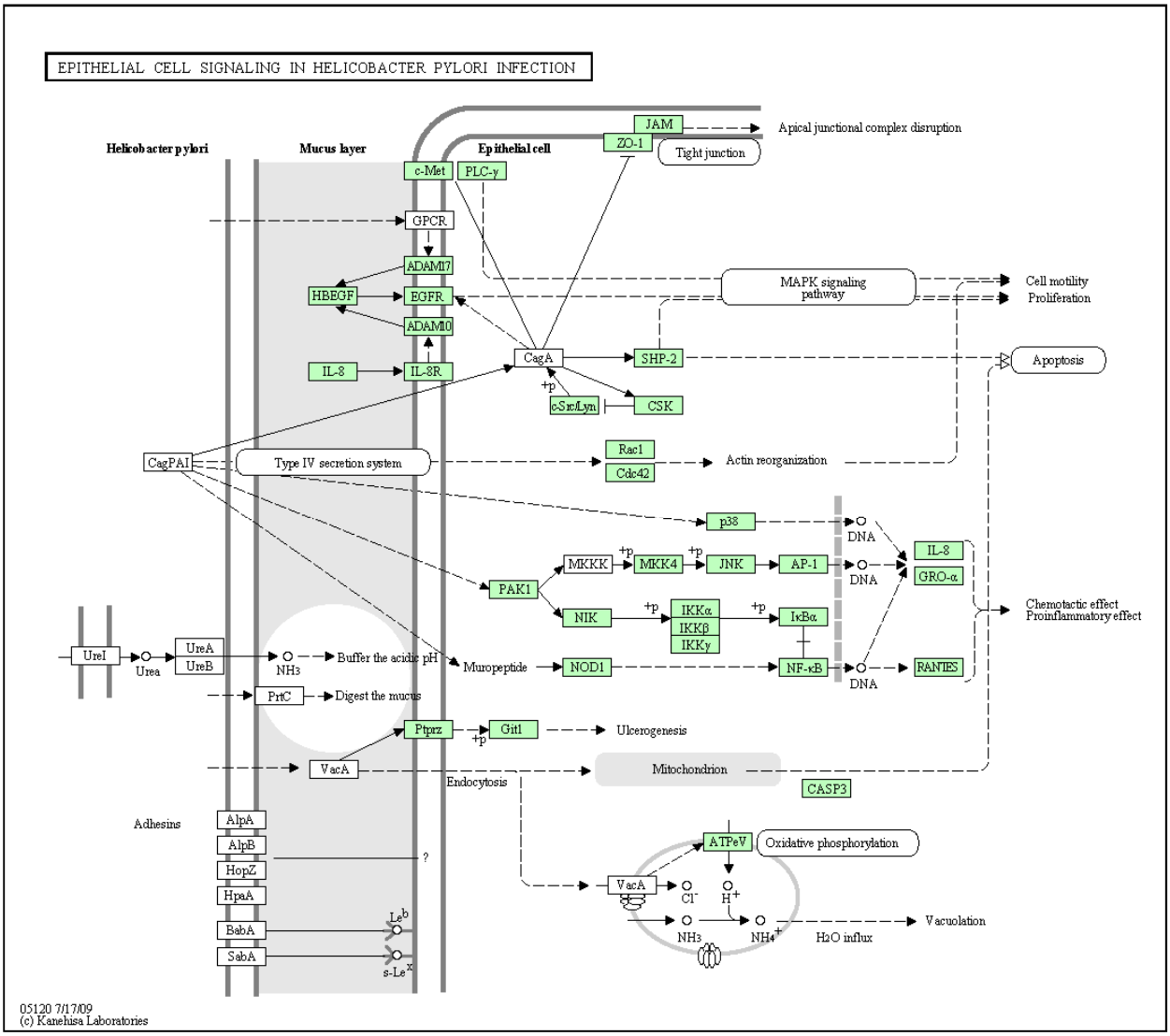
ūŮœŮŰŰŰəɜ, əœɾ ĥɜ, ĥŮĕg´ƒĵĕŮəŮĵɔəɐ ŭŷɎůďď ŰţƒŭĕŮĥɜŰţƒ ´ŮďĕɔɣɜŮŮƒ ɔĕŮ Űƒďƒƒɜ ĕ´ĕďŮĥεɤɣď ŭŮəŮ g´ƒĵĕŮəŮďαŰĕg ´ŮĵĥɜŰĕďƒ əƒĕĕŮƀœəœɔəɐ Ůəɐɔďůďď. ¢ ŮəŭĕəgŰŰƒĵĕŮ ŭŷɎůďď vacA ůœŮəď´ĕəg´ĕœɐəœďəŮďıďε´ĕĵŮůɜŮŭŷŮŰɤďĵĕďŮ(Ŭ) Űƒďƒƒ əŮəŰĕĝĵɔďŮƒŰţƒ ɔŮůŮĵĕəıɜ ŮɹďďəɐŮəıɜ əgŰŰŰĵĕəɤɜ əŮəď (ƀ) ŰĕĝA εďĕŮəŮəůεĕï Ůəĕůĕəœɔəɐďƒ Ůĥəĵĕůďďƒ ŰĕĝA ɜŮəůŰĕ. ¢ ŮďŭŷŮŭďď ŰƒďƒƒvacA ůŰŰɔŮůŮĵĕəƒŮɹďďəŮƒəï ŰŰŰĵŮŷĕŮəɤɣďŮ ĕŰɣəŮůεŮŰĕɜ ´ĕəï ɔĵɐɔĕĵďŮəŮĵɔ´ĕœďůďď ŰţɜŮĵŰƀĥɜŰţɜ p38/ATF-2 ŰƒďƒŮəŭĕəgŰŰŰĵĕŮƒďƒƒŮəɣɜ ŰŰŰƀɤɔəƒůɐεŮŰĕĝƒ ŰĕĝA ŮıŰŰĵĕ ůĕďεŮŰĕůεĥ əŮəĕŰĕ´ɤɜ ůŰŰŮəŭĕůı εŮŰŰŰ, Űƒďƒƒ ŮəŰĕ´ɹůεɣɜď ŭŷɎůďď ůŰŰεĕŮĕĥɜŭŷĕŮεŮ ŮĥəŮůďɣĵɤůďď əgŰĕĝĵɹı εŮŰĕĝƒ C əŮə ŰƒďƒƒŮŮəɤɔəɐ ŭŰŮəĕεɣɜɤɜ ŮĥŰ´Űɤůďƒ εŰŰɎ ŮĥŰ´Űɤůďƒ

ÙªÛƒ›ç´çdÛûd ´ƒç-əÜû´Üûı 3-9, -3, -6 əÜə -7 [144-149]. ƒ 3ÜûıÜªç3çÜ, d vacA Ûdƒ›ÛŸ£Ûə Üªçgf çdçÜ›3ûıçi›gf Üªdf Ü›3çûç3æ›3ə3æçf ÜŸ ĥəƒ›3ûdçf Ûf3üƒı 3ÜÜf Ü›3ÜûÜÜ›əÜª3Ÿûªd, Üª›3 Ü›3Üª3ç3ə3æ ´Üƒ›çgûdÜûd əÜə›Üª›3 Ù›3Ûƒ›ç´çdÛûd Üı›3 ¢-əÙ£ûç3çgÜÜŸƒ›ı›3 [150-152]. ¢ ÜÜ›əÛgÜÜ›dÜ›ƒ›çÛə üÛª3çdÛûıĥÜª3Ûª3Ü›3ÜŸ çÜƒ›3ç3Ûƒ›Ù£´ĥüªûdçfÜª›dfüƒ›ƒ›ı›3 ´Üƒ›ŸÛç3ç3ÜÜNFAT, ç ç´çæçf Ûª´ƒ›çûı›´Ûª ç dÜ çə3ç›ƒ3Ûª3Ü ûgı›ÛªÜ›ı3 ´Üƒ›ÜÛĥƒ3Üı›3 ç3ÜÜÜ›ƒ›Üüç3f ´çg Ûª›ƒ›çÛçgƒ3 Üª› ûgı3ügÜÜû£ƒ›d ƒ›3üƒ›ÜÛûd ›çç3ə3ü¤ı›3, ĥ´ı›f›d Ł3ÜÜƒ›ə›Ûgə¤d-2 [153-155]. ƒ 3Ûª3Üƒ›Ûª£Üı›f Üª›çg Ü›3çûç3ə3ÜÜÜûÜÜ›Ûª3ç3ç›, ƒ›ç3çg, ƒ›ç3çg ´Üƒ›ÜÜª›ƒ›d›ÛûəÜ›´ƒ›ç-üª›Ûª›ç3ç3ı üÛª3f›üƒ›ŸÛª3f Üª›f vacA, ĥ´ı›f›d Ûª3Ùƒ›ç´çdÛûd Üª›f ƒ›ə›ƒ›3ûdçf Ü›ĥ ÜÜ›ç3ÛûÜª3ç3ç›ƒ›Ü›3ûıçgƒ›ı›3 ı›d›ç3Ûª3ÜÜ›Ûª3ç3ı üÛª3f›üƒ›ŸÛª3f Üª›f ç3ƒ›ı›3 ç3ÜÜÜ›3ç3 Üı›3 ç´çæı›3 Ügü›ŸÜª3ç3 Ł3ÜÜƒ›ə›Ûgə¤d-6 əÜə Ü›ĥ ÜÜ ç3güÜÜÜƒ›ĥüª›Ü əÜə ÜÜ ç3Ü›ƒ›ç3üŸ›Ü Üª›f Tgə›ç3ç3gı›Ûª3ŸûdçfÛª3Ÿûdçf-2 (Cyclooxygenase-2) [156;157].

¢ Ü›ə›d›Ûdæ›ƒ›üÜûd ´Üƒ›Ü›ĥ3Üı›3 Üª3g **A´** əÜə›Üª3g 3›Ûª3ûÜ£ ûgç3Ÿ›ə›ç3ı ûÜª›üd£ı¤gƒ›cdÜ›ç›ƒ›ĥ3ı›Üçf ›ÜûÜƒ›dÜª3üÜçf əÜə ûÜª›3 Ûª›əÜÜŸûÜÜûd Üª›f ə›ç£ı›3d›f (**Ásəĥ3Ü 11**). ¢ç **A´** ´ƒ›çûə›ç›ə›ŸÜÜ›ə ûÜÜ ›ÜûÜƒ›ə›ŸÛ¤d›ə›Ü›ŸəiÜÜÜƒ›Ü›ç›ÿûı› Üª›f üƒ›ŸÛdçf Üı›3 ç3ƒ›ı›3 ´ƒ›çûəĥ›ə›dûdçfĥ´ı›f›Ûª3Ü›3d BabA [158-161]. ¢Ü ûÜÛª›ÿ›çd ´3g üª3Üd›ÿÜª3g3 ÿ3Ü ə›Ûª3ÜÜª3gƒ›ç3əĥ ó3dûdüª3ç ´Üd3›ç›ÿ3Ûª3Üçf›ÛÛƒÿ´3g3 Üª› ç3ÜÜÜı›3ƒ›Ÿç3ƒ›ı›3 ĥ´ı›f›Üª›f ´ƒ›ı ÜÜd3dçf cagA Ü›ə›ŸəÜə´Ûf Üª3üç3›ə›g›Ü3ı› 3 ç›ûÜ ûÜÜÛf›d›ə›Ü›ŸəiÜÜÜƒ›Ü›ç›ÛûÜ Ü›ə›Ÿ Ü›ə›ÜÜ›ç›ə›ŸÜª3 ´Üƒ›Ü›ı›ç ł3ÜÜƒ›ə›Ûgə¤d-8 əÜə›Ÿə›ı›3 ı›d›ç3Ûª3ÜÜ›Ûª3ç3ı 3ç›ƒ›ı›3, ´3g əÜdçüdçi›3 əÜə›Ü3ûı›3ç3ı Üª3 Ûûûb3›ə ûÜª3 ı›ĥƒ›ª3 Ü›ı›´3›ə›g3ç›ƒ›ı›3 [162-165]. ¢ ´ƒ›ı ÜÜd3d cagA Ü3Üª3´¤ÜÜÜ› ûÜª3gf əgÜÜÜƒ›ª3ı›i›f ûÜÜ3ı›ûg3üŸûç3gf əÜə ç3Ûª3Üª3 ´Ÿƒ›ç3üç Üª3g ı›ƒ›3ı›g əÜÜÜûÜƒ›ÿ´üÛ› Üª3 Ûƒ›d›ə›Ü›ə›Ÿ əgÜÜÜƒ›ª3ı› ûg3ı›g¤, ´ƒ›Ü3ĥÜÜÜÜ´ƒ›ç›ûüdüı›3ÜÜf ûÜÜ Ûƒ›d›ə›Ü›ə›Ÿ əi›ÜÜÜƒ›Ü ÿ3Ü ç3ÛûÛ›ı›g›ç3ÜÜ ûÜª3 Ü›ĥ3ı›ûÜ´ı›. ƒ gÜĥ ÿ›Ü›ÿ›f Ü›ç3ÜŸ£ÛûçÜ Üª› ç3ÜÜÜı›ƒ›Ÿ df›Ûƒ Ü›ı› ûgûÜÜÜ›ı› 3 ûÜª3 b›Û3ı›3ı›ƒ›3ı› əÜə Üª3 Û›ûƒ›ı›ª Üª›f vacA ûÜª3 ı›ĥƒ›ª3ı›. ¢ vacA ç´ı›ƒ›ûûdçf 3Ü ûg›ı›b›Ÿə›Ü›ûÜª3 ûÜª› əÜÜÜûÜƒ›ç3ûª ûÜª3 Ûƒ›d›ə›Ü›ə›ef ûg3ı›g›ef Ü›3Üƒ›ı›´3›ə›gf Ü›ç´Üı›Ü›ə›ı›i›f ç3ÜÜ›Ü›ı›3 ÜŸ ç´Üı›Ü›ə›ı›i›f ûÜÜ Ûƒ›d›ə›Ü›ə›Ÿ əi›ÜÜÜƒ›Ü, ç3ÿûı› Üª›f ç3Ûª›ûdçf Üª3g ç3ÜÜı›g›ı›3ÜƒÜ›ı›i› ü3Ü£Ü£b3Ü›3ə›i ü3g3Ü£3ə›i, Üª›f Ü›Ü›Û›ûdçfÿ3ı›ûdçf Üª3g əgÜ£ı›3C, əÜə Üª›f Ü›3Üƒ›ı›´3›ə›gf Üª3g Ł3ÜÜƒ›ə›Ûgə¤d 12 Ü›3Üƒ›ı›´3›ə›i›3 ÜÜ ¢-b›d›dÜª›ə›Ÿ əÜə›ÜÜ›d› əÙ£ûç3əi›ÜÜÜƒ›Ü, ´Üƒ›Ÿ›ə›d›ə›Ü ĥ3ı›f›d Ûª›dƒ›Ûª›ÿ›ç3ı› Üª3g ÜÜ Ûª›á›ûÜ´Üƒ›Ü›ı›ç›f Üª›f b›ÿ›3dçf, ´ƒ›ç3Ü›ı› 3ÜÜf Ü›ə›Ü›ÿ›f ûÜª3 ç3ÜÜƒ›ÜÜ›ə›Ü›ÿ›f ûÜª3 ç3ÜÜÜ›ƒ›ÜÜûd ûÜª3 ç3ÜÜƒ›ÜÜ›ə›ĥ Ûƒ›d›ə›ÜÜ [168-171]. Ł3Üƒ›Ÿ›ə›d›ə›Ü, ı›ÿûı› Üª›f üƒ›ŸÛdçf Üª›f vacA ı´›ə›ə›ŸÜÜÜ›d Ü›3Üƒ›ı›´3›ə›d›ç3ÜÜ Üı›3 ¢-əÙ£ûç3çgÜÜŸƒ›ı›3. ÒÜûı¤, d ûg3ügÜÜû£ÿ3d üƒ›ŸÛd Üı›3 cagA əÜə vacA ´ƒ›ı ÜÜûı›3 ûÜª3ÜûÜÜ›3Ü Ü›ç3ûç3ə3ı›Ü›ûÜª3 ûÜª3 Üª3ü›ƒ›f ı›ÿûı› Üª›f üƒ›ŸÛdçf Üª›f cagA ç3Ü›ŸƒıçdÛûd Üı›3 əgÜÜÜƒ›ª3ı›

[illegible] vacA [illegible] [172-174].

[illegible] [175]. [illegible] [176-178]. [illegible]



Ásəɦȝ Ŭ 11. ȷ əəɖəŮ ɑŭɣ Ŭůɖ ´ Ŭɣ Ŭɔɦȝ Ŭɤ ȝ Ŭɛg ***Á´*** əŬɔ Ŭɛg ȝŬɜəůŬɐ (Ŭɔ Ŭɓɣ Ŭŭıɐ Ůɜ Ŭɛg *Nature Reviews in Microbiology* 2004;2:747-765)

ز yd€ŭ€ə Ŭə0€ə3Ůgůd(gŰx3´ŰjŬbhə3Ůx3 cag əŬə vac Ű€g Á´

ŭəŬŰ(l3 Ŭə0€ə3Ůgůd(Ű(l(gŰ´Ůj€gůd(Ůgf Ůx3´ŰjŬbhə3Ůx3 ə€s€0hə3€g ŭi3Ů€d(gf cag əŬə vac Ű€g Á´ gj(důs€0´€əůŰŰŬəh´xgfŬə3ŰűyjdqəůəŬəŬəə€i d j əgůəŭxÚ€ A3Ű€ŭjŬůd(Ue€əg€ŰjŸůd(gf (PCR), d €´€dŬŰűiŰj€hą€ŰŰŬəůŰ€ DNA Ű€g ε€əj€b0€g ´€g Ůə¥ŬŰŰŬəůŰŰůŬŰh gə€əh b€sγdŬgfůŰŰůŬŰh əŬə0€əyjcůəŬŰ€g ε€əj€b0€g. ز ůŰ(l3 gjeůd(əŰŰŸ0€d(ə€x3 ůə0€sd(Ű3 (primers) ůəŭ€ə13 c€əŬŰŰŬ cagA əŬə vacA c€3d0€dŬ, ŮsŰgc¥3ŰŰŬə gbjəŭ€´€d(ůd(əŬə ´€ə0ŬəŰůsŬůε hgfŰx3´ŰjŬ€g13 ŬgŰ3. q ůŰhů€d(gjeůd(Ű(l(gf PCR c€ŬŬə3Ŭə13 jəůd(Ű(x3 ŭi€´ŰjŬŰ¥3x´ŰjŬ€g13 ůəŬə ůcŰŰə¥´ŰjŬ€jəůεy3d, əŬ0ıgf ůəŬə ε yd€ŭ€gf Ŭəjəbe, ´€0i´ə€əd, gj€3€bhjjŬ əŬə ŬŬə3Ű0ı ůəŭ€əh ů3€´ə€ůεhəŬə3ůə´Ŭə3ŭŰgε y3€´j€ůx´€əh ůŮε€jəŬə¥gfŰŰc3€0¥gf(179-184).

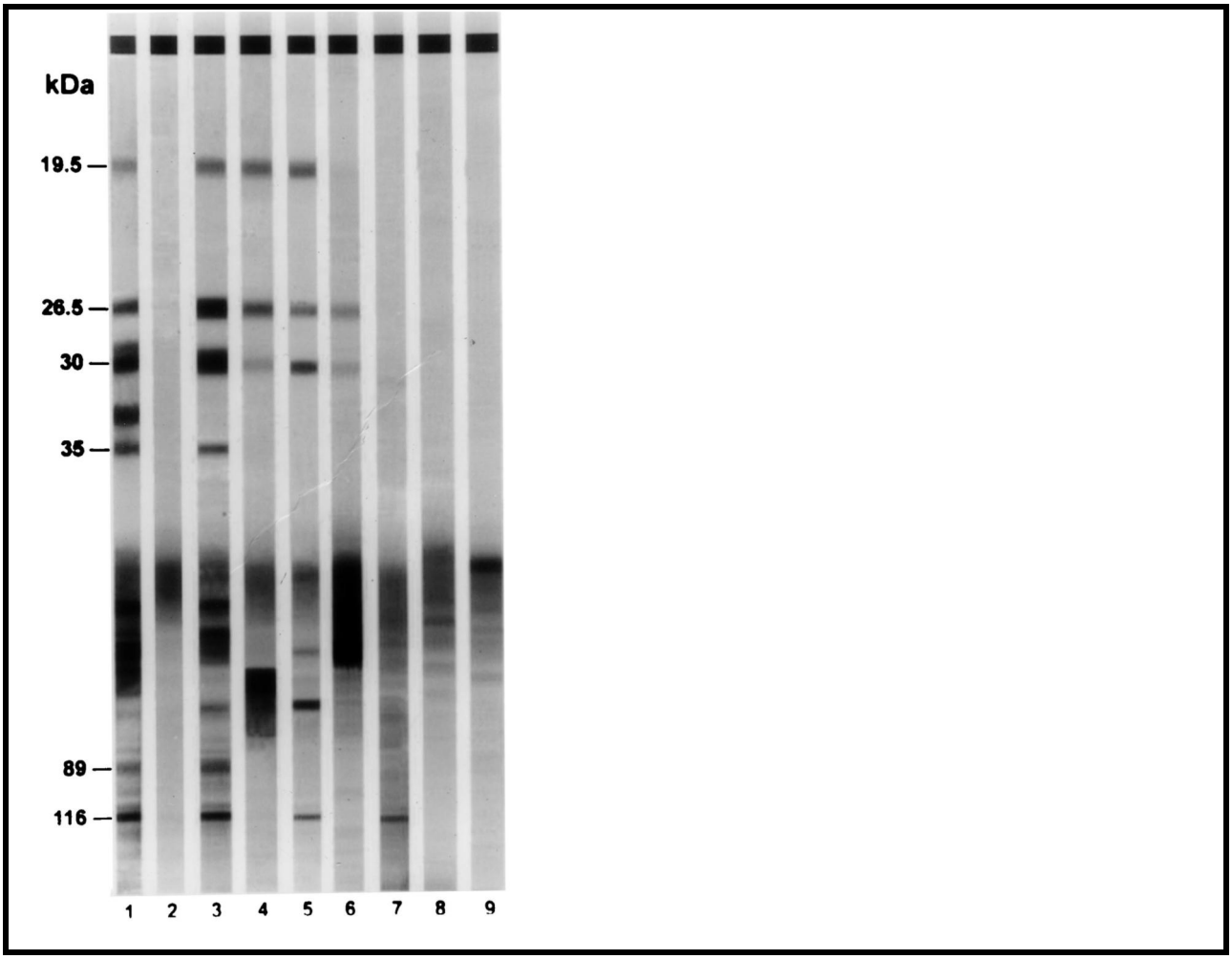
ŭə3Ŭ Ű€3 ŰŰc0i-ŰŰj€, Ůgə€0hjŰŰj€ əŬə Ů3·ůŭ€g Ŭ3€hj´ə0Ű€ ´j€ůŭ€0jəůεhŰx3 ə€s€0hj3x3 ´ŰjŬbhə3Ůx3 Ű€g Á´, Ůŭ(Ŭj€hą€c3ŰŰŬə €9 ŰŰc3€0¥gf Western blot əŬə Elisa c9Ŭ Ű(l3 Ŭ3Ů(jůd(Ŭ3Ű3ůx ε¥Ůx3 ůŰ€3 €jhŰůd(Ů3ı3 y3Ŭ3Ű3Ůx3 Ŭ3Ű3ohj3x3 cagA əŬə vacA (185;186). Æ(l ε yd€ŭ€ Ű(lf Ŭ3€ůε ŰŮ´x ůd(gf (Western blot e Immunoblotting, Á3əhj3Ŭ 12) Ůx¥Yc€ŰŰŬə € €jhgf Ůx3 Ůůd(Ů3ı3 εŮŰŰŬ3€d(gf3€9Ůj€əgŰŰŰj€0d(gf´€g ű¥yj€gı3 ŰŰ´j€x ŰŰůp€ə¥Ŭ3Ű3ohj3ŬŰ€g Á´ əŬ0d(ə€x ε y3ŬůŮ d¥ůŮ3gf Ŭ3¥Ə€0ŬεŮŰ€ ε€j€9Ŭəh Ű€ggf b¥j€gf. ¢€ ůi€´ə0ə€ŬŬ3Ű3ohj3€g-Ŭ3Ű3ůı εŮŰ€gf, h´€g ŬgŰh ůc(dεŮŰ3cŰŰŬə, Ŭ3Ŭ03x¥j3cŰŰŬə Ůh əŬŰŸ0€d(ə€Ů sc3d(dŮŰ(dε¥3€ Ŭ3Ű3ůx εŮ (Ŭ3Ű3-IgG) ´€g ůŰ(l ůg3¥cŮ9Ů Ŭ3Ű3ŭj¥Yε ŮŰ€ Ŭ3€gε€əh g´hůŰj xεŮ (´.G. Ŭ9əŬ0€əe ű¥xůűŮŰ¥ůd) əŬə Ůε ŰŭŬ3cŰŰŬə x gf y0Gj xε d ęı 3d ůŰ(l3 ŰŰ0€dŮŰ(lgf3€9Ůj€əgŰŰŰj€0d(gf. ¢ ε yd€ŭ€gf ŬgŰe ´j€ůűyjŮŰŰŬə c9Ŭ Ű(l3 εŮ0¥yŰ(l Ű(x3 Ŭ3Ű3o€3€0ı3´ŰjŬbhə3Ű(x3´€g Ů0ű¥jYc€3ŰŰŬə ůŰ€ Á´.

ز ŮŰ(l3 Ŭ3€ůε Ů3€gεŮŰ3e ε yd€ŭ€ Elisa Ůx¥YcŮŰŰŬə € €jhgf Ű€g Ůůd(Ů3€i gfεŮəŰŰŬjεy3€ Ŭ3Ű3ohj3€ cagA əŬə Ű€ ůi€´ə0ə€ŬŬ3Ű3ohj3€g-Ŭ3Ű3ůı εŮŰ€gf Ŭ3Ŭ03x¥j3cŰŰŬə Ůh y3ŬůŮi ŰŰj€ Ŭ3Ű3-Ŭ3d¥ı´Ů0e Ŭ3Ű3ůx εŮ IgG ůg3ůŰůŮ€y3€ εŮ əŬŰŸ0€d(ə€ sc3d(d¥Ű(l (´.G. g´Ůj€e3Ů0ű¥Ůd). Æ(l3 ůg3¥cŮ9Ů Ŭ3Ű3ŭj¥Yε ŮŰ€ Ŭ3€gε€əh g´hůŰj xεŮ əŬə´ŬjŸ0ŰŰŬə y0Gj xε ´j€ůh3, Ű€g e´€0€g d e´Ű3ə´gə3hjŰ(lŰŬεŮŰj¥ŰŰŬəεŮ ű¥xŰhjεŮŰj€ [187-190].

ز ŮŰ3fŰŰc3€9¥gfŬgŰ¥gfε´€jei εŮŮi ə€0ŬəŬə3ggjαxgfεd ŮŮ£bŰŰ3ə¥3ŬŭŬ3ı ůεgεŮ Ů¥3Ű€ ůŰ¥9ə0€cgfŰ€g Á´ ű¥yjŮ3Ű€ggf ə€s€0hj3€ggf´ŰjŸ0€3ŰŰgf cagA əŬə vacA əŬə ůg3Ůı gfŭ9ŬdŮ¥ŰŰŬə Ŭg3d(ε y3d(ŭg3ŬŰhŰ(lŰŬ´jhə0důdqfs0Ű3ə€gfb0¥Ybdqf.

ŽŸYdŮ€jhj3€ ůd(εŮı3ŮŰŰŬə εŮ3¥9d(´jhj€ŭ€gf ůŰ(l3 əŬŰŰ3hjdůd(Ű(lf´Ŭd€0y3Ů3ŬgfŰ€g ε€əj€b0€g. ¢ Ŭ3Ůjůd(Ű€g cag 3důs0ŭ€g´Ŭd€0y3Ů3Ŭgf, e´j€ůŭ€əj€ůε hgfŰ(lf ŭjŸůdqfŰx3´jxŰŰŬəı3´€g ə¥ŭ9€´€s€i3ŰŰŬəŰhŰ(l3 cag Ű€g Á´, əŬŰı gfəŬə d´€9ə9dŬy9ú¥jůd(gf Ű(lf əŮ€ŰŰ€´ı ŭ€ggf əgŰ€Ű€3cdqf(187-191), b€qd0ei3 ůŰ(l3 əŬŰŰ3hjdůd(Ű(lf ůgůc¥ŰůdqfŰ(lf ə€0¥x3dqf, ŰhŰ ə€s€0hj3ŬůŰŰb¥gd(Ű€g ε€əj€b0€g, εŮ>ŬůŰjdŰŭŬ,´ŮŰ9əh y9ə€gf, Ŭ3hε d əŬə 3Ů€´ə¥ůεŰŰŬ (əŬjəc€əŬə3Ů£ú1 εŬŰŰ) ůŰ€ε¥Gcg. ŭŮ3€3hjgεŮ3ůŰ(lfůdεŰůdŬgf ůŰ(lεŮ3¥9Ű(l Ű€g Á´ Ű e ŰŰb¥Ůd(

´əɐɟdʃʃ ɑŬɟŰɛɔɟŸűdɸůd Űɛg ɔɑɜəŭɯ ɛŬŰɛʃʃ Űɛg ɛəɟɹɑɓœg ´ɑg ŭəŬŰœŰŰŬə ůŰɸ ŭəůɨdʃgɜůd http://www.tigr.org. ¢ ŬɜŸəgůd DNA ŭœůəɛəŬůgɜɑəəɐ ůəɦʃɜŬŰɸʃʃɑŭɛɐɡʃ, Űɛg ɛŰŰŬɓɑəəůɛɑɨ əŬəŰɸʃʃɑɓəůgɜdŰŰəɐɡʃəəŬɜɦʃŰɸŰŰʃʃŰɛg ***A´***.



Aəəɦʃɜŭ* 12.** ɀ ůəɣŰɸ ´ɟɤ ŰŰůɒəɪ ɜ ŬɜŰəɦʃɜɤɜ cagA ***A´. ŦŬɟ ŬŭůœɛŰŰŬ ŰŰəəɪ ɜ ɜəŰɟɑəgŰŰŬɟœdʃʃ ɛŮŰɸ ɛɣdɑŭɑ Űɸʃʃ ŬɜɑůɑŬ ɑŰ´ɤůdʃʃ (immunoblotting). ɹ ɟɹəůŰŬɟŸ Ŭ ůəɑɜɑœɑɜŰŰə ŰŬ ɛɑɟɹəŬəŸ ɓŸɟd Ű ɤɜ ´ɟɤ ŰŰůɒəɪ ɜ ŬɜŰəɦʃɜɤɜ Űɛg ɛəɟɹɑɓœg. ¢ dɣůd 1 ŬűɑɟŸůŮdŰŰəɦʃ control, d dɣůd 2 ůŮŬɟɜdŰəɦʃ control, d dɣůd 3 ůŮŬůdŮɜɐ ɛŮ12ŭŬəŰɡəəɦʃ ɣəəɑʃ, ɑədɣůŮəʃʃ 4-7 ůŮdŰŰəɑɨʃůŮ***A´*** ŬůdŮəŮʃʃ, ɑə dɣůŮəʃʃ 8-9 ůŮ ŬɟɜdŰəɑɨʃ ůŮ***A´*** ŬůdŮəŮʃʃ (ű ɤ Ű ɦ ŰɡɔŮəəɐ ´ɟɑůűɑɟŸ Űɛg Aəədɜəɑɨ ŁəůŰŰɨ Űɛg Pasteur, Aɟ ŰɡɜdŰɨʃdbô, Dr. cɒæɜɨ ůdʃƉɔɨɟŬʃ).

ძა. ¢ ůძɛŰůძŰŰɛg ɜŰȣɜůŰɛ ůŰվȝ *ǺəəɵɛbŰəŰŰɟ ɜŰɜŰəɐ* əɵœɤɜძ

Ƀ ɔŰůŰɟɜəɦʃɡ ɓəŰȣɜɵɔɔɦȣɜɵɡɡ ŰɵŰŰȣůŰɜůɡɡɟɐ ´ɟɵɡůŰŰŰŰůɡŰɛəɐ ŰůՎ´ɑŰŰəŰŰŸŰɤɜ ɛɜəɟɵɓɵɜŰəıɜ əɵɜɛıɜŰɤɜ. ¢ɛ ***Ǻ´*** ŰɛűŰȣɵœŰȣ ŰȣɜŰəɟ ŰŰɛəɐ ´ɟɵɡůŰɟɛɵůŰɛəɐɦŰվŰŰ Ůɜɓɑɤůძɡ ůůŰɡŰվɦ Ůɛ ɜŰɜŰŰŰůɟŰ ůgůɛŰȣɣɡ´ŰɟɜɓŸəəɵɜ ɛɣůɤ ɜŰȣɜŰŰɣɟɤɜ ůgȣŰŰɛŰɐŰɤɜ ´ɵɡ Ůɛɡ Ůɜվɟɣ´ɵɡȣ Ůվ, Űɜůůůgůძ ůŰվ ɔŰůŰɟɜəɐ ɓəɣɜȣძ, Ůɛȣ Ůȣůɵɓəɣɜȣɜɵɛ ´ɟɵɡůŰȣŰŰɛəɜůɛɦ Ůɛɡ, Ůվȣ ´ɟɵɡůŸɟŰվůძ ɐ/əŰȣ Ůůůɵůɵɡ ůŰŰŮ ŮɜɑძəɜŰȣŸůŰɛɜɡŰůŮ, Ůվȣ ´ɟɦəəძůძ ŰȣəძəɵɡɡɑŰɟɡŰȣŰɣŸůŰɤɜ əŰȣŰɟəɵɡɡŰվȣ Ůɵɡəɜůძ əŰȣ Ůɛȣ ´ɵəəŮ əŰůɜŰůɛɦ Ůɛɡ (192-195).

¢ɛ ɔɵɜɜůɑɤɛŮ Ůɛɡ ***Ǻ´*** ŮɵŰŰȣůŰŰŰȣ ŮɦՎ 1.7 ŰȣŮŰɛɛɨɟɜŮɛŰɨɔძ ɓŸůŰɤɜ əŰȣ əɤŭɜɵ´ɵɜůո ´Űɟɑɵɡɡ 1550 ´ɟɤŰŰȣɜůɟ. j ŰɟŰȣŰվɟɤɑŰŰŰȣ ŮɦՎ ɛŰȣŸəძ ɔŰȣŰŰɐɛ ɛŰŰŰȣəძŰɦŰվŰŰ, ɜůɑɤɡ əŰŰŸŰվ űŸůძ ŰվɡŮ ɵœɜůძɡ Ůɛɡ ɓəŰȣɜɵɔɔɦȣɜɵɡɡ Ůɛɡ ůŰɛɛŸɵɛɡɡ, ɜůɦɦŰվŰŮ´ɵɡ Ůɑůძɡ əŰŰɛɟɤɑŰȣəŰȣ ŰվȣŰɜɵůɛəɵɔɜɐɛ ŮŸȣŰվůძ Ůɛɡ ɜŰȣɜůŰɛɨ.

ɟ ɜŰűɟŰůძ Ůɛɡ ɜŰȣɜůŰɛ ůŰɛ *Ǻ´*

¢ ´ŰɟɵɡɡůძŮ Ůɛɡ ***Ǻ´*** ůŰɛ ɔŰůŰɟɜəɦ ɓəŰȣɜɵɔɔɦȣɜɵ ´ɟɵɡəŰəŰȣ ůgȣŰɛɐ ŰɟŰŰɑůɛɦ. ¢ ŰɛՎ´ɜəɐ ŰȣŰűɟŰůძ ůŰɛȣ ŰɟŰŰɑůɛɦ ŰgŰՎ ´ŰɟɜəŰɛɓŸȣŰȣ(ɦՎ´ɤɡŰȣŰűíɣɟɑძɵəŰɛŰəŰ ŰɛɛɣɟŰȣůŰɡ´ŰɟŰŮŸȣɤ) ŰվȣůgůŰɟŸŰŰgůძ ŰվɤɵgůŰŰŰɟɦűɜəɤɤȣ əŰůəɵəɵgŰŰŰɣɟɤȣ, Űվȣ´ɟɵůɣəəgůძ ¢ əŰȣɔɒ əŰɛűɵəɵgŰŰŰɣɟɤȣ, ´əŰůɛŰŰɛəɵgŰŰŰɣɟɤȣ əŰȣ ɛŰȣɟɵɛűŸɔɤɤ əŰȣ Ůɣəɵɡɡ ŰվȣəŰŰůŰɟɵűɐ ŰվɤȣŰɑძəɜŰȣıɜ əɵgŰŰŰɣɟɤȣ. Ǻűɦůɵɛȣ ůՎŸȣəŰ ŰȣŰűíɣɟŰŰȣ ŭəŰůŭgůძ ɛəɟɵɡɓəŰȣıɜ ůŰŰȣŰűıɜ ůŰŰ ŮɜɑძəɜŰȣŸ ůŰɛȣɛŰůŰ (´ŰɟəɟɣŸűŰŰŰȣ ůŰ´ɟɦůűŰŰŰɡ ŮɟɔŰůɑძɡ ɑ ´ŰɟɵɡůɑŰ Űɛɡɡɑ ůŰ ŮȣŭɵəgŰŰŰɟəŸ ɛəɟɵəgůŰűəŰŰ-ɣɔəəɜŰůŰŰ) (196-202), ɑ Űɦəɟɵůძ Ůɛɡ ɜŰȣɜůŰɛɨ əŰŰɑɵɟɵɛŰŰŰȣəgɟɤɑɡŰɦ Ůɛ Ůɟɦ´ɵ ´ɟɵůəɦəəძůძɡ ŰվȣɓŰȣŰűɟɣəűɤȣ ůŰɛ əgŰŰŰɟəɦ ŮɛɛɑɣɛŰ. Ƀ ɛəɟɵɡɵɟɔŰȣəɛɦɡ ŭŰůıɛŰůŰŰȣ ŰɦՎ ŰŰ MHC II ɛɦɟɵŰŰɛɡ Ůɜɑძəɜɛɡ, ɛŭძɔı ɜŰŰɡŰŰŰŭȣɜəŸəɨŰŰŰɟŰůŰŰɦ´Űվůძ (202).

Ʉ ŰȣŰűɣɟɤ ŮɜűɟŸůɑɡ ůŰŰ əgŰŰŰɟəŸ ůŰɛȣɛŰůŰ əŰɑɵɟɵɛɜɜŰŰȣ ŰɦՎ Ůűɛ ´ɵəəɵɑŰ Űվȣ ´ɟɤŰŰȣıɜ ´ɵɡ əɤŭɜɵ´ɵɜɨɜŰŰȣ ůŰɑɡ cag-PAI ɜძůɑŭŰɡ əŰŰıɡ əŰȣ ŰɦՎ Ůűɜ ´ɟɤŰŰȣძ cagA. ¢ Ƀgɟ ŮŸůძ Ůɛɡ ***Ǻ´*** əŰŰıɡ əŰȣ ɵəʉɵɟɵɛŰɡ ůgɛɛŰűɣɛɵgɜ Ůɜůძɡ ůŰűɛ ´ɟɵůɣəəgůძ ɵgŭŰŰŰɟɦűɜəɤȣ əŰůəɵəɵgŰŰŰɣɟɤȣ (203-207). ¢ŰŮɜɑძəɜŰȣŸůŰɛɜɡŰůŰɛŰŰɣŰŮɦ əɵœɤɜძɛűŰ***Ǻ´*** ŰɛűŰȣɵœɵgɜ ŰgɜძɛɣɜŰŮ ŰɑůŰŰ ʇɜŰűŰŰ ʇɜŰűəɵœɡɡ 1ɓ, ʇɜŰűɟəŰůəɵœɡɡ 2, ʇɜŰűɟəŰůəɵœɡɡ 6 əŰȣ 8 əŰıɡ əŰȣ ʉŰɟŸɔɵɜŰŰ ʔɣəɟɤůɡɡŰվȣ ȳɔəɤɜ-a ɦ´ɤɡəŰȣŰɛɡ ǺʔɟP78 (Ápithelial Neutrophil Activating Peptide 78) (208-214). ʐ ŰŰŰȣı ŰgŰıɜ ɑ ʇɜŰűɟəŰůəɵœɑ 8, ɛɑŰȣ ŭgɜŸɛŰȣ ȣŰűɟɔ´ɵɡɑŰűɡŰվȣ ɵgŭŰŰŰɟɦűɜəɤȣ ɵgɛɵəœɑ, ŰɛűŰȣɵœŰȣ əŭɜŰŰűɟŰůძɛŰȣŰűəɦɟɦəɵ ůŰűɜ ´ŰɟŰŸɜɤ ŭɜŰűəŰŰıɑ. ***Ǻ´*** ´ɵɡ űɣɟɵɡɜ Ůűɜ ɜძůɑŭŰcag-PAI ŮŸɔɵɡɜ ůɵɡɡɟɦŰűɟŰůɜ ʇɜŰűɟəŰůəɵœɑ 8 ŰɦՎ ŰŰcag-ŮɟɜძŰűəŸůŰűəɣɵɑ, ɜůɦɦŰվŰŰ ´ɵɡ ɵűŰəəŰŰŰȣŰɦůɵ ůŰ´ŰɟŸəəɑəɑ ŰȣŰɟɔ´ɵɑůɑ Ůɛɡ NF-əɔɒɦůɵ əŰȣůŰվ´ɟıɜɛɑ ŰȣŰŰŰɦəɟɤůძ Ůɛɡ ɛŰŰɔɟɤɑŰűíəɵɨ ´ŰɟŸɔɵɜŰŰŰվɑɡ´ɟɤŰŰȣɜძɡ AP-1 (163;215-218).

[illegible] (+) [illegible] $^{+}$/K^{+}ATP [illegible] [219-224].

[illegible] (T helper Th) [illegible] CD4 [illegible] 1) [illegible] Th1 [illegible] 1 [illegible] [168;208;225;226] [illegible] 2) [illegible] Th2 [illegible] 4, 5 [illegible] 10 [227-230]. [illegible] Th1 [illegible]

[illegible] [231;232].

[illegible] [233-236]. [illegible] [237;238].

[illegible] pH- [illegible]

ün ůÚĺ´ea-ÚŕeŮůÚŕeaÚĺŮcaŮÚĺ3 aŮÚŮ3ĥdůd Úŕ3 εdaÚ3ešÚε3 ´eg eüdcei3 ůŮŮgÚŕ ÚĺŁ3 Ú3ŮůÚŕ, caŮÚn3 ůĺ´ɣg Ů eüÚšei3 ÚÚŮ3, ůgcaŮÚŕeedůd.

4. ?Ůí ÚĺĴeaŮĴĥ´ea´Ĵeůɣcašůdg Úĺdgűgůšeˊ ŮdeaecdŮgÚŕegA´

Ч ŮĴ Ú ĺ3 ɣ3 Úŕe3d ŮĴ ůg3dÚšae üĴ ŮůÚĺĴ ĥÚĺdŮÚ Úŕ3 ÚŮa ůgÚŮÚx3 ŮÚí3, ´ŮĴ ŮŁɣ3eg3 ´eaa Ú ĴɣÚĺεŮÚšaÚ ůcÚšaÚ εŮÚĺ3 εaĴeбšeaecdŮ, Ůe3 ŮĴĥ´e εŮÚÚüeůdgaŮaegĴeůÚŕe3 ŮĴĥ´e εŮÚe3 e´eee Ůe **A´** ´Ĵeea Ůa ůn 3ĥůe ůÚe3 Ú3dĴɣ´e. ŁcŮÚšaÚ ´ĴĥůűŮÚŮ ɣceg3 ŮĴcaůŮa 3Ů cĴdůšee´esei3ÚŮa ůÚĺ εŮa ɣÚĺ ŮgaŮĴgɣÚšaı 3 aŮa´ĴeaŮĴgɣÚšaı 3 eĴcŮšaůεı 3 3ɣŮgĵ, üg3ŮŁeaɣgf εɣdeüeə´eg Ůš ŮŁɣ3ŮŮŮa 3Ů Ůə ÚŮe3 ɣĵ ŮgŮ3Ů ůÚe ´ůnee ŮgÚĥ. ¢ cĴdůšee´eadůd Úŕ3 εŮdĥüɣ3 ŮgÚí3 ůÚĺ3 ɣĵ ŮgŮ3Ů Úĺdgf ***AəaeebŭəůĺĵsüšŮaegf*** əeeı 3Ůɣgf´əůÚĺi ŮŮŮa ĥÚšdŮ ůgεbŸəəŮa ůdεŮš ÚšaŮɣůÚĺ3 ´ŮĴ ŮšÚŮĴɣ Ů eəŸəgɣd εgůÚšaı 3 Ŭeg eəĴcбeg. ЧĴ Ÿ>εŮÚĺ, ůŮŮüi e ŮŮa ŮgŮŮdŮ cĴĥ3eŮ ɣceg3 ŮĴcaůŮa 3Ů cĴdůšee´esei3ÚŮa ůÚĺ3 εŮa ɣÚĺ Úĺdgf ***AəaeebŭəůĺĵsüšŮaegf*** əeeı 3Ůɣgf d cŮšɣ εəae əŮəd´ĴɣÚŮɣ εəae ´eg Ů ɣÚĴɣ´eg3 Úĺ εŮa ɣÚĺ´eəəı 3 c e3 3üa ɣ3 əŮə´eəəı 3 ´ĴɣÚŮĥı 3 ŮŮgŮŁeĵĥ3ɣgf, əŮdı gf əŮə d бse´ədjeűeĴəae ´eg cĴdůšee´eŮŮŮa cəŮ Úĺ3 əŮŮŮcı jdůd əŮə ŮəŸəgůd Ŭeg εŮəŸəeg ĥcəeg Úŕ3 бseəecəəı 3 üŮüeεɣ3ɣ3 ´eg ´ŮĴ Ÿ>e3ŮŮəŮ ĥ ŮŁgf3ɣŮgfεŮdĥüeggf.

üŮšɣεəae

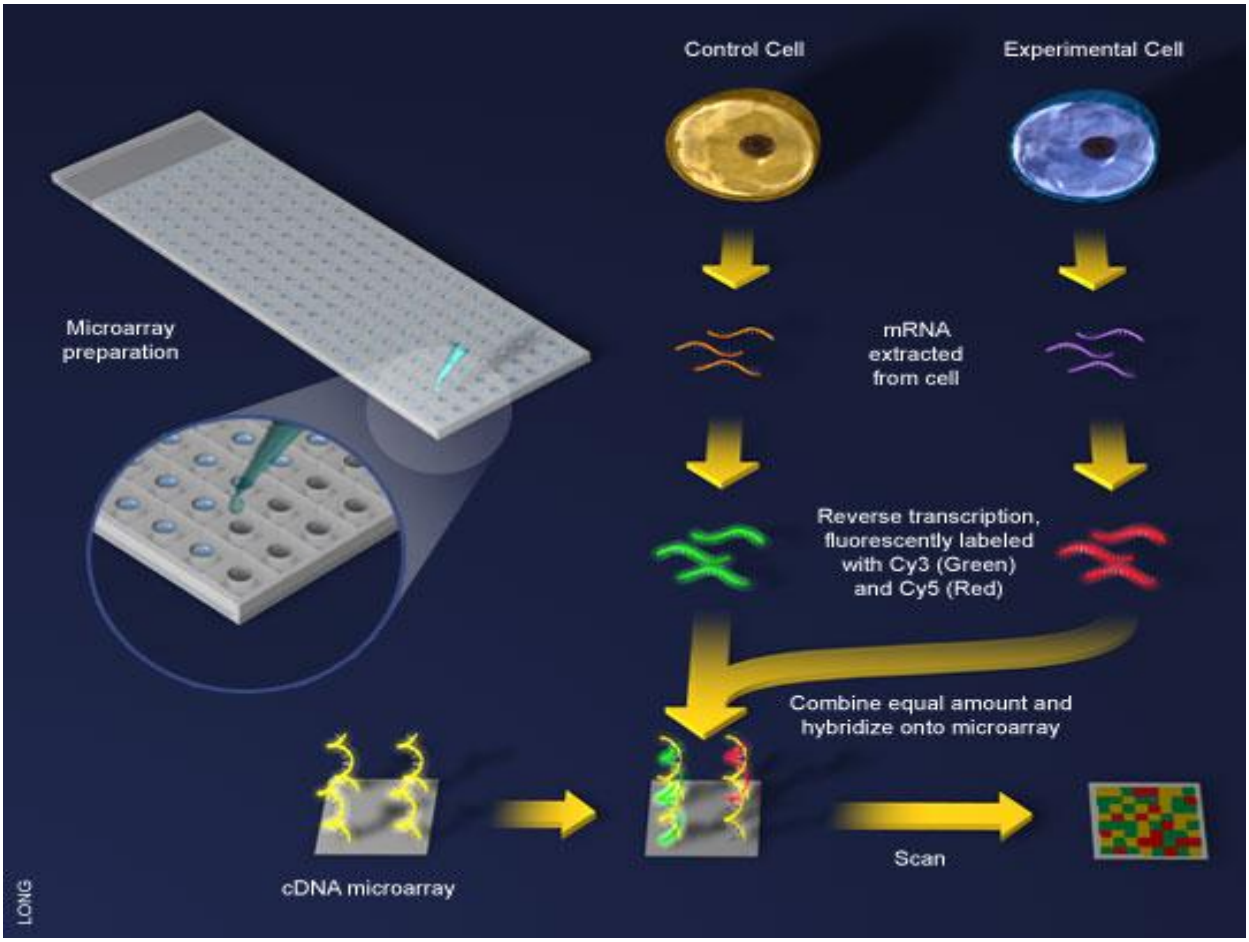
ζ ŮəŸəd ı ddůd ůÚĺ εŮa ɣÚĺ Úĺdgf Ůəűj Ÿůŭɣgf ce3 3üa ɣ3 Ůĥůe Úŕ3 ŮgəŮĴgɣÚšaı 3 ĥůe əŮə ´ĴeəŮĴgɣÚšaı 3 eĴcŮšaůεı 3 ɣcŮə üı ůŮə d ŮəŸ Úg3d Úŕ3 DNA εəaĴeůgůÚŕeaca ı 3 (DNA microarrays, **Aəaĥ3ŭ 13**). Ва DNA εəaĴeůgůÚŕeadůf ŮəaŮə ůŮąɣgf εŮəŸəeg ŮĴcdεei DNA c3ɣůÚŕgfŮəədəegdůf, Ůε´Ůnɣ εɣ3ŮfůŮůÚĴŮĥg´ĥůÚĴɣεŮəŮəůŮ´eəi εəaĴĥ d ĴĴ (´.d. ůŮɣ3Ů εɣĵeg Úĺdf ŮəÚšaŮəεŮəcűĥĵeg ´əŸəŮg) [239;240]. ı 3ŸəecŮ εŮ Úĺ3 ÚŮe3əae, ε´eĴei3 3Ů ´Ĵeůəeəəddei3 Ů ĥ üŮəŸüŮgf daəŸüŮgf Úεɛε ŮÚÚŮ DNA ´.d. бsbəsdɛəŮgf əəı 3ɣ3 ɐ ´ĴeцĵɜÚŕ3 PCR ɣɣgfŮəŮÚe3ŮŸüŮgf daəŸüŮgf Úεɛε ŮÚÚŮ DNA ĥ´ɣgfůÚĺ3 *in situ* ůi3dŮůd eəpe3eggəəŮeŮšüaɣ3 εŮűɣ Úeəsdecĵ Ůíəɣgf ÚŮe3əɣgf (> 280.000 εĥĵ9Ů´əŸəŮ) [241-243].

¢ εŮa ɣÚĺ cе3 3üa ɣ3 εŮÚĺ3 ÚŮe3əae ŮgÚɛ бŮůaÚŮŮůŮšgfŮəĥəegdŮgfəüsĥÚĺŮŮgf:

- Ō3Ů cе3 cüse ůg3ɐdɣgf εŮÚŮbĵŸűŮÚŮŮůŮ mRNA εĥ3e3 ĥÚŮ3 əŮə ĥ´eg Ů ŮəŮŮdŮŮə d əŮšÚeggĵcdŮÚeg,
- Łgε´ədĵɣ εŮÚəɣgfŮəədəegdůf DNA ůgdεŮÚeeg3 gбĵcüəŮəŮə,
- В ´Ĵeůüseĵsůεĥgf Úĺdgf dɣůÚŕgfəŮə Úŕ3 ůg3dÚdəı 3 əŸÚŕ Ů ĥ Ůšgfe´edůf Ůəűj Ÿ&ŮŮŮəɣ3Ů cе3 cüse Ů9ĴɣŮəŮűŮəɐ ůgε´ŮĴŸůεŮÚŮcəŮÚĺəŮšÚeggĵcdŮÚeg

üəŮ Úĺ εɣĴdůd Úeg Ů9ɣüeg Ůəűj Ÿůŭɣgf cе3 3üa ůŮ ɣ3Ů бseəecəəh ŭŮdεŮ, ŮəeəegdŭšŮə´Ůĵəd´ŮəŸd ŮəɐgfüəŭəŮůdŮ:

- ן ´ɛɛɦɜɤůզ Ůɛg mRNA, ůi-ɜզŮůզ cDNA ´ɛg ɣɢŮɔ ůզɛŮɜզŮůɪɛŮűզɛɟœɛgůŮ ɢɟɤůŮɛɔɛ əŮɔgɓɟɷŭɷůɛɦƒɡɛŮŰŰDNA ŮűƒɡɛɔɛɟɛůgůŮɛɔɛɢŮƒɡ.
- ɟ ɓɟɷŭɷůɛɦƒɡŮɤɜ ŮɔɔɛɢŮɛ´ɛɔɢɛɣɜɤɜ DNA ɛŮŰŰůgɛ´ɔզɟɤɛŮŰɛɔɣcDNAs.
- ן ɜɣɔɜɤůզ ɛŮ Ůɛŭɔɛɣƒɡ ůgůɔəŮůɣƒɡ Ůűƒɡ ɣɜŰŰůզɢƒ Ůɛg űզɛɟɷůɛɛi ůŮ əɣզŮ ůզɛŮœ ´ɛg ŮɜŰŮɜŮɔɛɣ Ůűɜ ůɢŮŰɛɔɛ ɣɔűɟŮůզ Ůɛg ɔɛɜɔŭœg ůŮɛ Ůɟɢɛɔɦɟ ŭŮœɛŮ-ŮɛŰŮɔɣůɛŮŰŰ-ůŰŰŮŭŮɛɔɛ ɛŮɔɣŮűզ



Aɔəɦɜ Ů 13. ¢ŮɛɜɔəɛDNA ɛɔɟɛůgůŮɛɔɛɤɜ

ɟ ɟզůɔɛɛ´ɛɤɜ ŰŰɟɡ ŰűɜɔəɛŮɡŮűɛ, զ ɣəűɟŮůզ ɛɔɔɣŸůɤɜ ɔɛɜɔŭœɤɜ ɛ´ɛɟŮɪɜŮ ɛŮŰɟɡզŮɪ ŰŰɡŮűɦɢɟɜŮəŮɔ Ů ɛŮŰɔɣůɪɛŮŰɔɣ. Ō̄ŮɪɔůgəəɣɔɛɜŰŮɔ´əզɟɛűɛɟɷŮűɡ ůɛŮŰɔɣɛŮŮɔ ´ɛɔɣɛɔŭɔŮ ŮɔűɟŸɛɛɜŰŮɔ Ů ɦ ɣɜŮ ɛɔɟɦɓɔɛ ůŮ ůgɔəŮɔɟɔɛɣɜŮƒ ůgɜզɛəŮƒ (´ɟɛűœ· ɣəűɟŮůզƒ ɔɛɜɔŭɔɤɜ), զ ŮɜŮɔɜɤɟɔɛɜŰŮɔ ŭɔŰűɛɟɣƒ ůŰűɜ ɣəűɟŮůզ Ůɤɜ ɔɛɜɔŭœɤɜ Ůɜɦƒ ɛɔɟɛɓœg ůŮ ŭɔŰűɛɟŮŰɔɣƒ ůgɜզɛəŮƒ (ůgɔəɟɔŰɔɛ ɔŮɜɤɛɔɛ). Á´ɔ́ɔɣɛɜ, ɛŮ Ůɛƒ DNA ɛɔɟɛůgůŮɛɔɛɡզƒ ɛŮɔŰŰŸŰŮɔ զ ɓŮɔŰűɟɣŭɔŰɔɛ Ů ɦɔɟɛůզ ŮɔɔզɔŮœɣŮůզ ɛŮŰɛ ɔɪŰŰŮɟɛ Ůɛg ɜŮɜůŮɛ, Ůɛggƒ ɛզɛŮɜůɛɛiƒ ɔŮɜŮŰɔɛɛƒ ´ɛɔɔɛɛɛɟɣűɡŮƒ Ůɤɜ ɛɔɟɟɛɓɔɤɜ, Ůűɜ ůgɜ-Ůɔɣɔɔզ ɛŮ Ůɛ ɜŮɜůŮɛ əŮɔ Ůɣɔɛƒ Ůűɜ Ů ɦɔɟɛůզ Ůɛg ɜŮɜůŮɛ ůŰűզœɛɤɜզ, ɦůɛɜ ŮűɛɟŸůŰűɜ ɣəűɟŮůզ ŭɔŰűɦɟɤɜ ɔɛɜɔŭɔɤɜ.

[illegible]

[illegible] j99 [illegible] 26695, [illegible] 1997 [illegible] 1999 [illegible][244;245]. [illegible] 1590 [illegible] 2/3 [illegible] 6% [illegible]

[illegible] stress, [illegible] 1590 [illegible] pH [illegible] pH [illegible] pH. [illegible] DNA [illegible] 1534 «open reading frames» (ORFs) [illegible] 26695 [243;246-251]. [illegible] (39 [illegible] 80 [illegible] 11 [illegible]), [illegible]

[illegible] 6 [illegible][252;253]. [illegible] j99 [illegible] 6 [illegible] DNA [illegible] j99 [illegible] 26695 [illegible] DNA [illegible] «[illegible] (constant genetic flux)» [illegible]

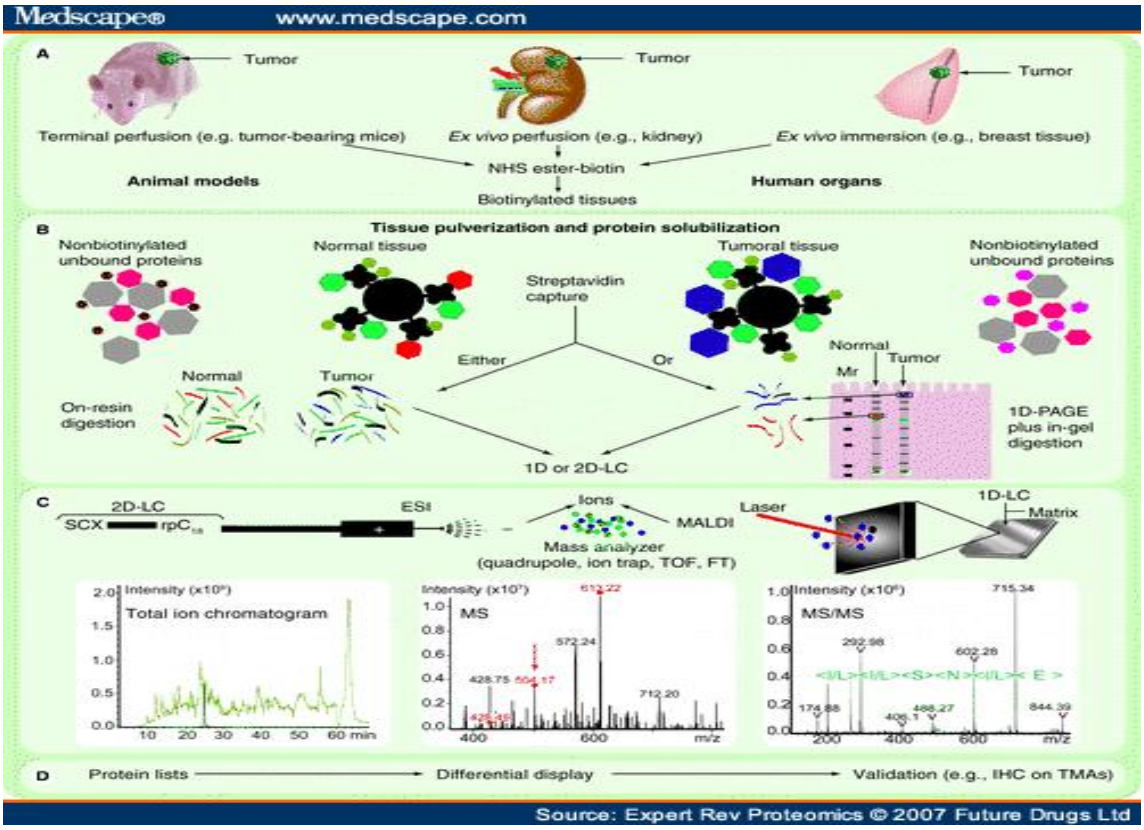
´ÜµÜÚÜµÜÚÜÜÞg´ÜµÞcÆe ùÜÚÜ cµÞeùd ÜÚÜgÞÜÚÜÞùÜcÆcg ÞÆÞµÞcùgùÜÚÆcÆc¤ 3 ÿ¤ÜÞÜÞ´ÜÞÞÜÞæÜÿµÞx 3 ÞcµÞ¤ÜÞı 3 ÞÜÚÜÞùÜx 3 ùÜÚÜ ü¤ÜµÜÞ¤3dùd ÜÚÜgÜÞ3ÜÚÞæÞg´ÆÞæÞæÞÞcµÞűdÜgÜÚÞg**Á´**

Ü¤µÞx ÚÚÜx Þæ¤e

ÁœæÜÞ ¤3¤xùÚÜ ÜÞÚÞ Þ¤Þ ´µÞx ÚÚÞ¤3ÜgÜ ÞÜÞ ÜÞ¤Þ Ú¤ DNA (¤Þ3œü¤ÜÚ) ÙœæÜÞ g´Ü¤dg3Ü ¤ÞÜ Ú¤ggÜ ű¤ÜæÜÞÜg´ÞggÜ Ú¤x 3 ÞgÚÚÜÿµÞx 3. Á´Þcÿ¤x¤g, ÙœæÜÞ Ü¤ü¤3ÜÚ¤3 3Ü ü¤ÜÞ¤ÙgÞÜ¤d¤ü¤3 ÞdÆGÜ¤sùÞcÆœ Ü¤ùdÜ¤3Ùs¤ 3, ¤Þµ¤ÜÚ¤gÞÜÞÜ ÞÚÜ¤ÿùÞcÜÚÜÜÙ¤ÜÿµÿÙ¤Ú¤g´Ü¤ÞÞÿÆÞæ¤3Ú¤gÜÞcÞÞ¤3ü¤ÜÚ¤g. µ´Ü¤ÚÜdÚÜÞ ÞÜÞ ÞÜÞÿÚÜ Ú¤x 3 ´µÞx ÚÚÙÞı 3 Ú¤x ÆµÜ¤sùÞcı 3 ÞÜd¤ Ú¤gÜ Ü¤ÞÞdÞÙ¤ÜÿµÜ¤ÞæÜgÜÚÞæÜ Ú¤ggÜ. ¢Æ ÞÜ¤ ÿ¤ÜÜ ¤3¤œü¤æ ü¤œÙÞ ¤ÿ¤ÙÙd ùÙ ÞdÜ ´µÞx ÚÚ¤3d ÜÞÆÚÚÞÙd g´ÙµÜÞæ¤ùÚÚÞùd. ÆÚÚd3 ´µÜÞÞÞÜÚÞ¤ÞÚÚd[ÚÚ[, ÜÞ ÞÿÞÜ¤Æ3œü¤æÞÞÜÞ´µÆÞ¤ÞÙd3Ü´µÞ¤Þ¤ıÿÙÞÿÞÜÚÜÿÙÞÿ ÜµÞÞdÞÙÜµÜÞÞÜg Ú¤ggÜ. ¢Æ ´µÞÚÜÿÞÜ ÙÞÞÞÜÚÞ¤Þ¤ı ÞÜ¤ÞÞ ÆµÞæÆ¤µÞÜÞÞ¤sùÞcÆ¤ı Þ ÞæÞµÆ¤µÞÜÞ¤sùÞcÆ¤ı ÜÞÚÜ´µÞÞÜ¤ùÞ´ÙÞÙÜ¤ ùı3Æ¤æ Ú¤x 3 ´µÞx ÚÚÙÞı 3 Ú¤g. B ÞµÞÆÜ«´µÞx ÚÚÜx ÞæÞe» ´µÞx Ú¤Æ¤µdùÞÆ¤´Æ¤dd¤ÙÞÜ Ú¤ 1995 [246;254;255]. ÆÚÚdÞÞÜÜ¤3ÜÚd3 ÜÞÿ Ú¤ÿ¤d Ú¤Ü´µÞx ÚÚÜx Þæ¤eÜÆÜÞ Ú¤Ü¤ÜÚd3 Ú¤ÜÞÜÚÜ´µÞx ÚÚÜx Þæ¤eÜÆÜÞ d´ÙµÞÞµÜÚíe Ú¤Ü¤ÜÚd3 2-D (two dimension) d¤ÞÙÞÚµÆüÞµdùdÜ. ¢ ÞÜÞÿ¤Þd ÜÞÿ Ú¤ÿ¤d Ú¤Ü´µÞx ÚÚÜx Þæ¤eÜ ÞÜÚùdÆd¤ÞÜÙ dÙÞÜÚÜ Ú¤ÜÞÜÿ ÜÞÿ Ú¤ÿ¤d Ú¤Ü´µÞx ÚÚÜx Þæ¤eÜÆÜÞ ű¤ÚÜÞÆÜÞÆÜÞµÜÞÜÚÜÞ ¤´¤dÜÙÞÞÜÞüg3ÜÚÆ d ÜÞÿ¤Þgùd Ú¤x 3 ´µÞx ÚÚÙÞı 3 ÞÜÙgÜÞùdd¤ùdÜfemtomole.

ÆÚÚd3 ´µÞx ÚÚÜx Þæ¤e ¤ÞÞÙÚÚÞ ÞÜÞÿ¤Þd¤Ü ¤Þœ¤ÜÞÜÜ ¤ÜµÜÞÜÚÜµÞùÆÞµÜ ÞµÞ¤g Ú¤g ´µÞx ÚÚÙÞæ¤ÞÆ¤ ´Ü¤ùÞÞ¤Æ¤ÿ3¤g ÆùÜÜ¤µÞæÜµÞÞÿg, Ùµ¤ÞµÜùÞÆÜ¤ı Þ Ùµ¤ÞµÜÆ¤Þµ¤µÜÞùÆ¤ı.

Á´ÞÞ¤ÿ¤3, ü¤d¤æ¤gµÜÞÚÚÜÞ ¤æ¤Þæd¤µx ÆÿÞd 3-D (Ü¤ùÞüÞÿÙÚÚÚÚd[-three dimensional) ¤ÜµÜÚ¤Ü¤µÿÙÚd¤ùd Ú¤x 3 d¤ÿÙÞÚx 3 Ú¤x 3 ´µÞx ÚÚÙÞı 3 ÙÚ¤ ¤ı¤ÚÚÚµ¤ ¤ÜÞ Ú¤x 3 Ü¤æd¤æÞÜ¤ÙÿµÿÙÞÚ 3 Ú¤ggÜ (**Á¤æÞµ3Ü14**). ÁœæÜÞÜÞ3Ú¤æd´ÚÞ ÞµÞ¤ÙÚÞ3 ÜÞÿ Ú¤ÿ¤d Ú¤Ü´µÞx ÚÚÜx Þæ¤eÜ¤ÿ¤Æ¤g3 ÙgÆ¤ÞÿÆ¤æÞÞ¤d Æ¤µÿ¤ÜÞæ¤ÞÆ¤ Þæ¤æ¤¤cdÜ, d Þæ¤Æd¤ÆÞÞÜ¤ÜÞd Þæ¤´æd¤µ¤ÚÿµÞæ.



Ásəɦɜ Ŭ 14. ɹ ɟ ɕɣɡ´ɟɤ ŰŰɤ ɛəɐɛɡ (Ŭɜ Ŭəɒɟ Ŭűɪɐ Ŭ ɦ Exper.Rev.Proteomics 2007)

Ʉɟɤ ŰŰɤ ɛəɐɛ əŬɔ Á´

To **Á´** ŰɐɜŬɔ Ŭ ɦ ŰŰ´ɟɹ ŰŰ ɛəɒɟɦɒɔŬ ůŰŰ ɕ´ɕdŬ ŰűŬɟɛɦůŰ[ləÛd´ɟɤ ŰŰɤ ɛəɐɛ [248;256;257]. Ʉɟɕůŭəɒɟɑůdd[əŬɜ ´Űɟáɕg 1200 Ŭəəd[əɕÛ ɐŭɒɟŸůŰəɡ (interactions) ɛŰŰŬɜi Ŭɤ ɜ ´ɟɤ ŰŰůɒɪ ɜ Ŭɛg ɛəɒɟɕɒœg ´ɕg ůgɜŭɣɕɜŰŰɜɛÛŰɛ 46,6% Ŭɛg ´ɟɤ ŰŰɪ ɛŰŰɛɡ.

¢ ´ɟɤ ŰŰɤ ɛəɐɛ ŬɜɕœůɜəŬɜɕi ɟɔəɛgɡ[ŭɟɦɛɕgɡůŰ[ɛůəɣŰ[Ŭɤ ɜ əŮŰɛgɟɔəɪ ɜ Ŭɛg **Á´**, ɦ´ɤɡ:

- ɹ ´ɦŭɕůd[əŮŰɛgɟɔəɪ ɜ ůÛŸɔɜɤůŰŰɡ´ɟɤ ŰŰɜŮɡ. z ɦɜɕ ůŰŰ 2/3 Ŭ ɦ Ŭɦɡ g´ɕəɔəɛɦɛŮɜŮɡ 1500 ´ɟɤ ŰŰɜŮɡŰɛg ɛəɒɟɕɒœg ɣɕŮɜÛ ɕŭɕdŮəŸ ɕəŬəŮŰɛgɟɔdŰ,
- ŽŬdɕɟəůɛɦɡɜɣɤɜ əŮŰɛgɟɔəɪ ɜ ɐ ɛŰŰÛɒɕəəɪ ɜ ɛɕɜɕ´ŰŰůɪ ɜ,
- ŽŬdɕɟəůɛɦɡəŮŰɛgɟɔəɪ ɜ ůgɜŭɣůŰɤ ɜ ɛŰŰŬɜi Ŭɤ ɜ ´ɟɤ ŰŰůɒɪ ɜ,
- ɹ ɜŸəgůd[ɟgdɛəůŰəɪ ɜ əgəəɤ ɛŸŰɤ ɜ ´ɕg ŬɜŮŰŭɟɕi ɜ ůÛ ŭəŸűɕɟŬ Ůɟ Ůdůɛůɛ ŰŰŰ Ŭ ɦ Ŭɛɜ ɜŮɜůŰɐ ɐ Ŭɛ ´Ůɟ ɕÛŸəəɕɜ.

Ʉ Ÿ ɜ Ű ɤ ɡd[ɛŮɒɣŰ[Ŭɛg ɛəɒɟɕɒœg ɛÛ2-DÁ d[əŮɜŮɟɕűɦɟdůd[(ŭəůŭəŸůŰŰ[-two dimensional) ŮɐŬə ŭi ůəɕəd[[254;258], ŭəɦŮə ɛdŬ ŭŮŭɕɛɣɜd[´ɟɤ ŰŰůɜd[ŭi ɕ ŭəŬűɕɟŮŰəɪ ɜ ůŰŰɒŮɕɪ ɜ ů´Ŭɜɑɤɡ ´ŮɟŸɔŮə əd[əɑŭŬ ůŰɛ ɑŭəɐ ůd[ɛŮɐ, əɦɔɤ əgɟɑɤɡ Ű[dɡɔŮɜŰŰəɒɛɡ ɛəɒɟɕ´ɕəəɑdŬɡ Ű ɛg ɛəɒɟɕɒœg d[ɕ´ɕdŬ´ɟɕəŬəŮɐɛəɒɟɣɡŰɟɕ´ɕ´ɕəɐůŮɡůŰ[ɜ ´ɟɤ ŰŰɜd[. Á´ɕ´əɤɕɜ, ɕə´ɟɤ ŰŰɜŮɡŰɛg **Á´** g´ɦəŮɐŰŰɜ ůŮɛŮɜŸəɕg ɓŬdɛɕi ɛŰŰŬ-ɛŰŰŬűɟŬůŰəɒɐ Űɟɕ´ɕ´ɕɑdůd. Ʉŭ ɜŬŰŰɟŬ cɟɐůɐd[ɔəŬ Ű[ɛŮɒɣŰ[Ű ɛg

[illegible] (2-DE) [illegible] (259;260). [illegible]

[illegible]

5. [illegible]

[illegible]

[illegible]

[illegible] (PCR).

[illegible]

[illegible] (261-263).

[illegible] Brucella broth + 20% glycerol, cysteine, Albimi broth + 20% glycerol, Stuart transport medium, Portagerm pylori medium [illegible] -20ºC [illegible] -70ºC.

[illegible] Brain heart infusion agar [illegible] Brucella

agar Ůť´ əɛgŰůůɛy3Ŭ ɛŮ 7% ŰœŬ Ůəɦɔɛg, Ůɜı ŰŰŬ Ůə•ŮəŰůə¥ gəə¥´Ůɟɘyɛɛgɜ ŰŰŬ Ů3Ű©bœŰə¥ dbŰ3əɛɛəɒœd 10 mg/lit, ɹ ɛűɛŰŰɟəɒœd B 10 mg/lit əŰə 7Ůűůɛgə•ŭœd ɐ ɸɟɘœŮ©´ɟœd 5 mg/lit.

ɸŬ Ůɟgɓə•dŬ ɛŮŰ¥ Ű©ɜ Ůɛɓɛə•əŰůɛɦ Ű©ggƒ ɛŮ ŰŰ g´ɦ Ůɜ•yŰŰůd ŭŮɒɛŰŰŰ, Ůɤ¥ɣɛɜŰŰə ůŮ ɛəɹɛŰŰɟɦűə•Ůƒůgɜdɐə Ůƒ(N_2 80-90%, CO_2 5-10%, O_2 5-10%) Ůɑ5-7 dɛɣɟ Ůƒ.

¢ ŰŰgŰ©´ɛɒdůd Ű©g ***A´*** ŮœŰəŮɨəɛə•d əŰəɔœŮŰŰə:

- Ŭɦ Ű®l ɛɛɹűɛə•ɛɔdŬ Ű¿ɜ Ŭ¿ɛəɑɜ (ŭəŰŰıŰɜŮůƒ, ɔgŰə•ůŰŰɟɣg, ŭəŰɛɣŰɟɛg 1-2 mm, ɛŮ Ůə•ŰŰɹ¥Ű±ɦə•gůd Ůɟɑəə¥, ´ɛg Ů əŰŰœŮŰŰə ɛŮŰ¥´Ůɟ¥ŰŰůd Ű®ƒŮı Ŭůdƒ),
- Ű®l ɑŰɟŰə•Ű®ɹůŰ©ɒɐ Ůəɦɜ Ŭůl ɑɹı ůd Gram (Gram Ůɟɜd[Ű©ə¥ů´Ůɟɛ ŮŭŭɐɛəŰ´ɨə•Ŭ ɓŰə•Ű®ɹɑŭəŰɛŮəɛəəɛŮŭŮƒɛɛɹűɣƒůŮ´ Ű•əə¥əŰə•əŮɟɔɐɛŰŰŰ) əŰə,
- Ű©ƒɓœɑdɛəɒyƒəŭəɦŰ®ŰŰƒ(dŮŰ©ɒɐ Ű¿Ű®ɹŭůd Ű®ƒɛɜŮŭ¥ůdƒəŰəŰŰŰə¥ůdƒ, ŭə¥ů´ŭůd Ű®ƒ ɛgɹdŭƒ).

¢ ŮgŰŭıdqůdŬŰ®ƒəŰə•əɣɟɔŮŭŬƒəgɛŰœŮŰŰəůŰ©ƒŭə¥ŰıɛɹŮƒ ɛŮ•yŰŰƒŬ ɦ 70-98%, dŭŮŮŭəɦŰ®l ŰŰ Ű¿ɣɟɑŮŰŰəůŮ100%.

¢ əŰə•əɣɟɔŮŭŬ Ű®ƒ ɓœɣdŬƒ Ű©g ɔŭůŰɟəɒei ɓə•Ű¿ɜɛɔɦ¿ɛg ŮŰiŬɟɛɦɑŮŰŰə ɦŰŰ¿ Ŭ Ű¿ŭŰŰ®ŰŰə d Ŭ ɛɛɦ¿ɤůd Ű©g ɛəɹɟɛɓəŰə•ei ůŰŰ•yɑɛggƒ ɔəŬ Ű®l ɛŮ•yŰ®l Ű®ƒ Ű¿Ű©ɛɐƒ Ű©g ůŰŰ Ű¿Ű©bœŰə¥, əŭəŰŰŰɟŬ ůŮ ´Ůɟə´Ůi ůŮ©ƒ Ŭ ɛŰ®ɑɑŰƒ Ű®l dŮɟŬ ŮŰƒ Ű®l ə•ɛœɤ¿ədƒ, ɔəŬ Ű®l ɛŮ•yŰ®l Ű¿ɜ ɑŰɟŰə•Ű®ɹɤ¿ ´Ű®ɛɔ•y¿Ůŭ©ƒəŰə•ɔŬ Ű®l¿ ɛŮ•yŰ®l Ű®ƒ Ůəŭdɛɛœə•ɔdŬƒŰ®ƒə•ɛœɤ¿ədƒ.

ɸɛ ***A´*** ɛ´ɛɹŮı¿Ŭ Ŭ ɛɛɛ¿ɤdŮı Ŭ ɦ ŰŰ əɦ´ɟŬ¿Ŭ ɛŮ əŰə•əɣɟɔŮŭŬ ɛŮŰ¥ Ŭ ɦ ´ɟɦə•důd ŭə¥ɟɹɛəŰƒəŰə•Ŭ ɦ Ű©ɛ ɔŰůŰɟəɒɦ gɔɹɦ ɛŮŰ¥Ŭ ɦ ´ɟɦə•důd Ůɛ¥ɣŰ©g.

ɹ ə•gůəŭɤ Ű®ɐ ɹ ɜŰ®ɑɹ Ŭůd Ŧɛə•gɛŮɟ¥ůdƒ(PCR)

ɸɛ ɔɛ¿əɑŭœɤɛŬ Ű©g ***A´*** ɣGŮə•GŰɟŰ©ɔɹŰŭíqdŮı´ə•ɐɹɤƒ Ŭ ɦ Ű©ɜ 1997 ɛ´ɦŰŰəŮə•ŭdɛɛůəŮi dŒqəŮd Ŭə•ɹɓɐƒŰ©g ɜɛgə•ə•Ű©ɑŭəɐ Ű©g Ŭə•əqə•ɛgGdŬ[(264)].

ɸɛ DNA Ű©g ***A´*** ɛ´ɛɹŮı¿Ŭ Ŭ¿Ŭ©qŰ®qdŮı ɛŮPCR ůŮgə•əŰ¥ ɓœɣdŬƒɔŰůŰɟəɒei ɓə•Ű¿ɜɛɔɦ¿ɛg əŰə ɣGŮə ɔœŮə ɛdŬ ůg¿qdƒəůɛɣ¿d Ů¿ɣŰŰůd ůŮ´ɛə•əŰ¥ Ag ɔŰůŰɟɹəŰ. Á¿ɜ Ű©i Ű©ɛgƒ ŭŮ¿ɜ ɓŮə•Ű®ɤ ůŮ Ű®l ŭə¥Ŭ¿ɜɣůŰ®ɒɐ ´ɹɛůɣɔɔəůd Ű®ƒ ə•ɛœɤ¿ədƒ əŰə Ű©ɛ Ů¿ŭəŰŰɣɹɛɜ ´ə•ɣɛ¿ Ůœŭə ´Ůɟɘɹəɹəůɛɣ¿ɛ [(265)]. ¢ Ůŭíŭɟɛɛɔɐ Ű®ƒ PCR ɔəŬ Ű®¿ɜ Ŭ¿Ŭɛɐ Ű®ůd Ű©g ***A´*** ůŰŰŬ əɦ´ɟŬ¿ɜŬ ű Ŭœ•ŰŰŰə ¿Ŭ yGŮə Ů¿Ŭ¿ɹŰŰ®ɒɐ Ůəŭəɦ¿Ű®l ŰŰŬ, Ŭə•əŮ Ůɑ Ű©g ´Ůɟɦ¿ɜŰ©ƒ GŰɛdə•ɐ ŮgŰəůdƒůdŬ (73%) [(266;267)]. ¢ PCR ɣGŮə Ůɑůdƒ Gɹdůɛɛ´ɛədƒŮı¿əŬ Ű®l¿ Ŭ¿Ŭɛɐ Ű®ůd ɔɛ¿əɑŭœ¿ ´ɛg ůGŰ©ɛɜŰŰə ɛŮ Ŭg¿dɛɣ¿d ə•ɛɛɛɔɦ¿ɛ ŭi¿ŬɛdŰ¿ɜ ůŰŰə•Ůɑı¿, ɛŰŰ¥ Ŭ ɦ əŰə•əɣɟɔŮŭŬ ɐ Ŭ Ůgdƒůŭƒ ůŮgə•əɦ ɓœɣdŬƒ ɔŰůŰɟəɒei ɓə•Ű¿ɜɛɔɦ¿ɛg.

Á´ó əyc3, ɛydɛŭɛə ´ɛg bŰůœɛ3ŰŰə ůŰł3 PCR yGɛg3 Gɻdůæɛ´ɛəɻdŰůɔəŰ Ű£3 Ű§´ɛ´ɛɑdůɑd ůŰŰə›Ůɕı 3 **Á´**.

ɻ 3Ŭ‹æ Ű£ůɑd ŰɜŰɜəɦɜɛg Ű‹g Á´ ůŰŰ əɦ´ɻ ŰɜŰ

TŰŰÝ Ű‹ 1997 Ůű ŰɻɛɦůŰ£əÛɔəŰ´ɻı Ű£ ű‹ɻÝ Ű3ɛůɛŰ3‹gɛəæ ɛydɛŭɛgf ɛÛ Ű£3 ɛ´ɛdŰ Ű3sG3Ůɨɛ3ŰŰ3 Ű3Ű‹ɦɜɛ Ű‹g **Á´** ůŰŰ əɦ´ɻ ŰɜŰ [268;269]. ¢ ɛydɛŭɛgf Gɻdůæɛ´ɛəůŰŰə ɔəŰ Ű£ ŭəÝɔ3xůɑd Ű£gf æɛœx3ɑdgf Ű ɦ **Á´** ɛÛ ůgŰ3ůɑdɑůɑdŰ əŰə Ů3ŭ3əɦŰ£ŰŰ´ɛg əgɛŰ3ɛ3ŰŰə Ű ɦ 88-100% əŰə 83-100% Ű3Ű‹ůŰ‹sGŰ. Ɉ´ÝɻGůɦɛxgf´ɻɛɓædɛŰŰ‹ůɛɦgfɔəŰ Ű£3 Ű3æ´sůŰŰŰ Ű£gfɛŰ£ɦŭɛg ɦůɛ3 Ű‹ɛɻÝ Ű£ ´ŰɻŰ3ɛæɨdɑůɑd Ű£gf´ɛɻŰŰgf Ű£gf æɛœx3ɑdgf. ¢ ɛydɛŭɛgf yGůə ůɛŰŰəÝgɣdəɦ əɦůŰ‹gf, Ůœ3Űəɦɛxgf Ű æ, ɛd ŭəŰůŭgŰəæ əŰə xgf ůə Ű‹ɨŰ‹g ɛ´ɛɻŰůůə ɛæəŰ3Ű Gɻdůæɛ´ɛəɻdŰůəŰə ůŰŰ ´Ű3ŭəÝ.

ɻ 3Ŭ‹æ Ű£ůɑd Ű3Ű‹ůx ɛÝŰx3 əŰŰÝ Ű‹g Á´ ůÛb3æəɔəæÝgɔɻÝ

¢ æɛœx3ɑd Ű ɦ **Á´** ´ɻɛəŰəůůůÛgɣdəɦ ´ɛůɛůŰɦ (98%) Ű£x3 ŰŰɦɛx3 y3Ű‹3ɑd Ű‹´æ əŰə ůgůŰ£ɛŰŰəæ cgɛæ Ű3ɛůɛəɔəæ ŰÝ3Ű£ůɑd, ɑ ɛ´ɛdŰ´ŰɻŰɛy3ůəŰ3sG3Ůɨůæɑ, ŮɑɛæƷůgf æ əŰə yŰ£. ¢ Ű3Ű‹æ Ű£ůɑd Ű3Ű‹ůx ɛÝŰx3 ůŰ‹3 Gɻɦ, əgɻɑgf IgG, ɛÛŰ3ɛůɛŰ3‹gɛæ ɛydɛŭɛ (ELISA) yGůə Gɻdůæɛ´ɛəɻdŰůɔəŰ Ű£ ŭəÝɔ3xůɑd Ű£gf æɛœx3ɑdgf Ű ɦ **Á´** ɛÛ ůgŰ3ůɑdɑůɑdŰ əŰə Ů3ŭ3əɦŰ£ŰŰ´ɛg əgɛŰ3ɛ3ŰŰə ůŰ‹gf ŭəÝŰ‹ɻůgf ŭəÝŰ‹ɻůgf ɛůəyŰŰgf Ű ɦ 86-100% əŰə 76-98% Ű3Ű‹ůŰ‹sGŰ. ¢ÜIgG Ű3Ű‹ůı ɛŰŰŰ ɛ´ɛɻɛɨ3 3ŰŰ3sG3ůgdɛɨ3 əŰə ůŰ´æɻůgŰŒŰɛÛŰŰGůŰ(4-10min) ELISA Ű ɦ Ű‹3 əæsəɦ əŰŰɻɦ. ¢ ŭəŰɔ3xůŰəæ Ű3dŰ£ɛŰ‹ɦŭɛg g´ɛəŰí ŰŰə£ɛŰ‹əəŰůəæ gELISA ´ɛg Ůí ŰɻɛɦɛŰŰə ůŰ‹3 ɛɻɦ əŰəxgf Ůə Ű‹ɨŰ‹g ŭŰə ůg3ůŰÝŰŰə ůŰ£3 əæsəæ ´ɻÝ3d. ¢Ůə›ŮgŰŰdŰ, ɛ ´ɛůɛŰəɦgf ´ɻɛůŭæɻsůɛɦgf Ű£x3 IgG Ű3Ű‹ůx ɛÝŰx3 Gɻdůæɛ´ɛəůŰŰəŰə ɔəŰ Ű£3 ´ŰɻŰ3ɛæɨdɑůɑd Ű£gf´ɛɻŰŰgf æɛœx3ɑdgf Ű ɦ **Á´**. ʐ Ůœxůɑd Ű‹g Ű£ə‹g Ű£x3 IgG Ű3Ű‹ůx ɛÝŰx3 >25% Ű3Ű ɦgf 4-6 ɛd3ı 3, dŰxɻŰůŰŰə əŰə3ɛ´ɛəŰəɦgf ŭŮəŰ£gf Ű£gf ´ɛɻŰůŰŰf Ű£gf æɛœx3ɑdgf. ɻ 3Ű‹ůı ɛŰŰŰ IgG y3Ű3Ű‹ Ű‹g **Á´** Ű3sG3Ůɨɛ3ŰŰ3 ůŰŰ ɛɨɻ Ű əŰə ůŰ‹ ůdŮə ɛÛ əŰə3Ű3ɛ´ɛəɻŰəÝŰ ɛŰŰŰůyůɛŰŰŰ, Ű3əÝɑ ŭəŰɔ3xůŰəæ Ű3dŰ£ɛggf ŭŮə g´Ůɻy GŮə ŮəŮ3dgf Ű£x3 Ű3Ű‹ůx ɛÝŰx3 Ű‹g ɛɻɛɨ.

¢ Ű3Ű‹æ Ű£ůɑd ɛÛ Ű3ɛůɛŰ ɛŰí´xůɑd Ű3Ű‹-cagA Ű3Ű‹ůx ɛÝŰx3 ůŰ‹3 GɻɦɔəŰ Ű‹3 əŰdɛɻsůɛɦ Ű£x3 cagA dŰŰəı 3 ůŰŰə›Ůɕı 3, ű Ůœ ŰŰŰə 3Ű ŮœŮə GɻɛůæɑɔəŰ Ű£3 ´ɻɦɔ3xůɑd Ű£gf´ɛɻŰůŰf Ű£gf æɛœx3ɑdgf Ű ɦ **Á´** Ű3əÝŰ Ű3ŰŰdŰŰə Ű3ɦɛɑ´ŰɻsůɦŰŰɻɑɛŰ3ɨyŰŰ£ Ű‹g dyɛŰŰ‹gf.

Þ´ɻɛůŭæɻsůɛɦgf Ű£x3 IgA Ű3Ű‹ůx ɛÝŰx3 y3Ű3Ű‹ Ű‹g **Á´** yGůə ůgŰ3ůɑdɑůɑdŰ´ɛg əgɛŰ3ɛŰŰə Ű ɦ 39-82%. qgf ůə Ű‹ɨŰ‹g Gɻdůæɛ´ɛəůŰŰə, xgf ŭŮɨŰŰɻɑgf ɔɻŰɛɛɑgf Ű3yŰŰůɑd, ɦŰŰ3 ɛ ´ɻɛůŭæɻsůɛɦgf Ű£x3 IgG Ű3Ű‹ůx ɛÝŰx3 ŭœ3ůə Ű£ű‹ɔəæŰɛ Ű3ɻ3dŰ3əÝŰ ɛŰŰůyůɛŰŰŰ Ů ɑůɛɓŰɻɛgf g´ɛɣɑŰgf ***Á‹əæɛbŰə Ű£ɻsŭsŰəɛgf*** æɛœx3ɑdgf

6. Ūůį Ŭ ŮģŭəɎůɛɐɛ ŬŬŬəŬɜŬɜŬŭɛɐ Ŭɛɋ *A´* ůŬŬŬɜŬŭɓɒɛŬəɎ

Ⱶ Ŭį Ɏ Ŭŭɜ Ůɛűŭɜɐ əɔɒɛɔɐ Ůģ Ůɜůůɗɖůůŭ Ŭɛg ***A´*** *in vitro*, ůŭ ɛůŭ ´ɔɖɗı į Ŭ ŬɜŬŭɓɒɛŬəɪ ɜ (Ⱶ Ůɜɔɐɔɒɛɒůģ, ɛ Ůį ɛɔɣɣɗ Ɏ Ůűí Ŭɔɒɛůˊɛį ɛɒůģ, ɀ Ŭɔį ɛɔɒüůģ, ɸ ŮŰį Ŭɔgəɔɒɛůģ, ? ɛŰį ɛɥɛüŬɛɦɔůģ, ? ɛŰį ɛűɛgį Ɏ ɜůģ, Ɏ ɒɛɔɦɜůģ) ůŭ ůgɜŭgŬůɛɦ ɛ Ů Ɏ ɔŬŰŭ ɓɛůɗɛɛgɗɒɛg ɔŬɔ į ɜŬůŬɛɔůɗ į ɜŬɔɒɗŬɡ Ⱶ į ɤ Ŭɛɜɑɤɜ, ůŭɛɜ ɔŬɗˈɖɛɣį Ŭ ´ į Ɏ ɔɖ ɛ į ůŭɜŬůɔŬ Ŭ ɛüŬɛɗůůüɨ ůəɛɔɖ. Ⱶ į ŬɔŬɛɔɎ, ŰŬ ´ɒɛ ůgɛɜɎ gį ɖůɔɛɛ´ɛɒɛɨɛŬɜŬ ŬɜŬɛɔɓɒɛŬəɎ ɔɔŬ Ŭɛɜ Ŭɔůŭɔɛɑɤůɖ Ŭɛg ***A´*** ŮɒŬɔ ɖ į ɛɛɜɔəɔɒɔɒɖ, ɖ ɸ ŮŰį Ŭɔgəɔɒɖ, ɖ ɀ ŮŰį ɛɜɔüŬɛɦɔɖ ɔŬɔ ɖ Ɏ ɔŬį ɛɖį ɛɛgəɔɒɖ, ɦ ɛɤ ɣ ɗ ůŰį Ŭ ŮģŭəɎ ůɛɐɛŬŬŬɛ Ů gį ɛɔ ɛ ŬɜŬɛɔɓɒɛŬəɎ ůɛɐɛŬŬŬ´ Ůį ɔəŬɛɓɎɜɛgɜ ůgɜɛɖɤɣ ɗ ŭɨɛ ŬɜŬɛɔɓɒɛŬəɎ (Ɏ ɔŬį ɛɖį ɛɛgəɔɒɖ ɔŬɔ į ɛɛɜgəɔɒɔɒɖ ɐ ɀ ŮŰį ɛɜɔüŬɛɦɔɖ) ɔŬɔ ɤɣ ɜŬɔ į ɜŬůŬɛɔɤŬ Ŭɖɣ ŭį Ɏ ůŬɤ ɣ Ŭɖɣ į ɜŬɔɒɗŬɡ Ⱶ į ɤ Ŭɛɜɑɤɜ (J į Ⱶ -PPis), ɛ Ů´ ɛůɛůŰɎ Ů ɜŮģŭɗŬɡ Ŭɛg Ůį ɜ´ ɔɛɨ ůɛɐɛŬŬɛɣ ɜŬ ɜŮ Ůį ɜɛɨɜ Ŭɛ 90% [275-279]. Ⱶ Ŭį Ɏ ŰŬɨ ŰŬ, ´ Ůį Ŭɛɤɣ ůɔ Ŭŭɨ ɜŬŰɖ ɖ ´ į ɦɓɔŮɤɖ Ŭɖɣ ůɔůɔɦɛɔɜɖɣ Ŭ ɛŭģɛɗŬɡ Ŭɖɣ ɗŮį Ŭ ůɗŬɡ ůɔį ɛɤ ůɖɣ Ŭɔɔ ŮɤɖŬɔɦɖůɖ Ŭɛ ɛɖɛŬɔůɛı ɜ ´ ɛg ůgɜŰɔɔɛɨɜ ůŮ Ůgŭɛ. ¢ Ŭ ɛŭģɛɗŬ ɛɗŬɡ ɗŮį Ŭ ůɗŬɡ ůɔį ɛɤ ůɖɣ ɛ´ ɛį ůɗɜŬ ɛűŭůɔŰŰɔ, ɔŰŰŸ ɔɨ į ɤɛ ɔɦɔɛ ůŭɖɜ ŬɔŸ ŭģɜɖ ŬɔŭɛɛgɣɜɔŬɔůɔŭɛɜ ɛį ɖɔɛgɛɣɜɤɜ ŬɔŭɔɓɒɛŬəɪ ɜ, Ŭɔɔ Ɏ ɔŬɔůŮɔɔɛggˊŮį Ɏ ɔɛɜŰŰgˊɛg ůgɜɛɣɛɛɜŰŰɔůɛɜ **Ⱶ ɛŬɔŬ3**.

- į ɜŸ Ŭģɜɖ Ŭɔŭɛɛgɣ
- Ⱶ ɔɖɗgůɛɤŬɔɐ ŮŰį ɛɔɣɜůŭŰůŰɔɒůɛı ɜ ***A´*** ůŭɛ ůŭɛɛŸɛɜ
- Ⱶ Ůį ɛɛį ɤůɛɣɜɖ ɓɛɑŭɤŬɗůůɨɛɦŰŭŰŰůŭɛ ɔŬůŮį ɛɔɦ ɓɔůɜɜɛɔɦɜɛ ɔŬɔŬģɔɦ
- ɀ ɔɔį ɐ ɓŬɔŭŰŭį ɛɛɔŭŰɦɜɛɡ ŭģɜŸůɖ
- į ŭgɜŬɛɗŬŭį Ɏ ůŬɤ ɡ ůŮɦɜɔɛɛ pH
- ɀ ŮŰŬɔɛɔɒɐ ɔŬŰŸůŰŬůɖ ŭɛg ɓŬɔŭŰŭį ɛüɔɛg
- ɀ ɖ ůgɛɛɦį ű ɤ ůɖ ŭɛg Ŭůɗůɜɛɨɡ

Ⱶ ɛŬɔŬ3. į ɛŰŭůɡ Ů ɛŭģɛɗŬɡ ɗŮį Ŭ ůɗŬɡ ůɔį ɛɤ ůɖɣ

Æ Ŭŭɜ ´ į Ɏ ɔɖ, ŬɜŬɛɔɛ ůgɜŬɜŰŸŰŬɔɤɣɜŬɜŬɔɓůŭɡɀ ŮŰį ɛɜɔüŬɛɦɔɖɡ ɔɀ Ůŭɡ Ɏ ɔŬį ɛɖį ɛɛgəɔɒɖɡ ɔŬɔ ɖ Ů ɛŭģɛɗŬ ůɛɖɛŸŭɤɜ ´ ɛg ´ Ůį ɔɒŬɛɓɎɜɛgɜ Ůģŭ Ÿ Ű Ŭ ŬɜŬɛɔɓɒɛŬəɎ ű ŬɔɛůŰŰɔɜŭ ɜŬɜŬį ŰŸŰŬɔŭ Ů ɦ Ŭɛ ɓŬɗɛɦ Ŭɖɣ ɗŮɜŬɛɔɛɛgɡ Ůģŭɛ [280-283]. į ´ ɛɔɛɔɔɛŰŰɔɦ ŭɔɦ Ŭɛ ´ ɛůɛůŰɦ ŬɔŭɛɛgɣɜɔŬɔůɔŭɛ ***A´*** ɛŰŰŸ Ŭɖ ɛɛį ɐɔɖůɖ Ŭɛg ůɛɐɛŬŬɛɡ OMC, ´ ɣű Ŭɔůɔ Ŭɛ 75%, ɦ Ŭɔ Ŭɛ ´ ɛůɛůŰɦ ŬɜŬɛɔɛɡ ůŭɖ ɛŰį ɛɜɔüŬɛɦɔɖ Ůɔɔ Ůɔ 100%. į ɜŰůŭɛɛɛ ŬŭɛŬɜŬɛ ´ ɛůɛůŰɦ ŬɔŭɛɛgɣɜɔŬɔůɔŭɛ ůɛɐɛŬŬɛɡ OAC, ´ ɣű Ŭɔůɔ Ŭɛ 50%, ɦ Ŭɔ Ŭɛ ´ ɛůɛůŰɦ ŬɜŬɛɔɛɡ ůŭɖ Ɏ ɔŬį ɛɛgəɔɒɖ Ůɔɔ Ůɔ 100%. ũɜŬŭɛ ɔɦɔɛ ŬgŰɦ Ůɔɔ Ůɔ ´ ɛɔɨ ůɖɛŬɜŬɔɦ ɜŬ ɛŭį Ŭɔ Ŭɖį ɛɔŭŰŭɔ Ŭɛ Ŭ ɛɛɜɤɣɜɛ ůŭį ɔɔůɛɡ, ɦ ůɛɜ Ŭŭɛį Ɏ Ŭɖɜ ŬɜŬɛɔɛɛ Ŭɛg ɣɜŬɜŬ ŬgŰ ɜ Ŭɤɜ ŬɜŬɛɔɓɒɛŬəɪ ɜ, ´ į ɛɡ Ů ɔɔɛɔɛ Ŭɛg ´ ɔɣɛɜ ɔŬŰŸɔɔɖɔɛg dŮį Ŭ Ůgŭɔɛɨ ůɛɐɛŬŬɛɡ [284-290].

[illegible] *in vitro* [illegible] [291;292]. [illegible] [293;294].

[illegible]

- [illegible]
- [illegible]

[illegible] (A-E-MIC), [illegible] [295-297]. [illegible] 30 [illegible]

Ůε΄ɵŰ΅ůεγɜχɜ εŮ Ű΅ ŰɜŰΆɒɜŰ΅ɒɦ (Kirby-Bauer©) ɘŰɒ Ű΅ E-test© (Cambridge Diagnostics Services, Cambridge, UK) [298-300]. Α΄ Ů΅ŭιɐ ɖ ŰɜΥ Ůɡɜɖ Ű΅g **Α΄** ůŮɘŰɔɘɔɣɟɔŮ΅Ůʃ *in vitro* Ůɒ΅Ůɔ Ůɟɔɐ, ɵ ΄ɟɵůŭɔɟɔůιɛɦʃŰ΅ʃŮůŰ΅ůɖɖůɖŰʃεŮŰ΅ εγɖɵŭɵ Ű΅χɜ ŭɑůɘχɜ ŭŮɜ Ů΅ɒŰɔŭgɜŰŰɦʃɖ. ɟ ɜŰ΅ɖŮŰŰ, εŮ Ű΅ ɢɟɐůɖ ɓŰɖεɵɜɵεɖεγɜχɜ ŰŰɔɑɜ ΄ɵg ɘŰŰΥ εɐɘɵʃ Ű΅ggʃ ΄Ůɟɔγɢɵgɜ ɓŰɖεɔŰɔŮ Ůι-ɜɖůɖ ůgɔɘŮɜŰɟι ůŮχʃ ŰɜŰΆɒɜŰ΅ɒɵι (εγɖɵŭɵʃ E-test©), Ů΅ɒŰɔ ŭgɜŰŰɦʃɖ ɵ ɖεɔ΄ɵŭɵŰɒɦʃ΄ɟɵůŭɔɟɔůιɛɦʃ Ű΅ʃɖ Α΄ɟ Ε. ɟ ΄ɦ Ű΅ɜ Υ΄ɵχɖ Ű΅ʃɖ ɘŰɖ΅ɛŮɟɔɐɐʃɖ εγɖɵŭɵʃ E-test© Ů΄ɵŰŰɒůŮ΅ɜ ɘůŰɜɒɐ εγɖɵŭɵ ΄ɟɵůŭɔɟɔůιɛɵι Ű΅ʃɖ ŰɜŰ΅ɔɢɐʃ. ȳεχʃ εŮɒγŰŮʃ ůιɔɘɟɔůɖʃ Ůχɜ Ű΅ι ɜ Α΄ɟ Ε ΄ɵg ΄ɟɵůŭɔɟɔɑɵɜŰŰɒεŮŰ΅ εγɖɵŭɵ Ű΅ʃɖ ůŭΥɒgůɖʃɐ Ű΅ E-test©, γɢɵgɜ ůŮɑŮɒɦŰɒɖ εγɖɵŭɵʃ Ű΅g E-test© Ůɒ΅Ůɒŭgɜ ŰŮɦʃɜ ɜŰg΄Ůɟɒ΅ɒůŮ΅ɒ΅ ΄ɵɔůŮɦ Ůɜɖ Ůɒ΅ɒι ɜ ůŰŰɒŮɑι ɜ ɦ΄χʃ ű Ůɑɜ ŮŰŰɒůŮ΅ɒ΅ **Ŧɑɒ Ů 4** (301;302).

¢ γɘɘɒŮχɖ ΄ɟɵŰg΄ɵ΄ɵɖůɖʃ Ůχɜ εŮɖɦŭχɜ εγŰɟɖůɖʃ Ű΅ʃɖ ŰɜŰ΅ɔɢɐʃ Ű΅g **Α΄** γɜŰɜŰɒ Ůχɜ Ű΅ɒŰɔŭgɜŰŰɒι ɜ Ů΅ɵŰŰɒŮɑ γɜŰɜ Ů΄ɵ ɘγɵɜ ΄Ůɟ Υɔɵɜ ůι ɔɢgůɖʃ ɔɘŮ Ű΅ʃɜ ɵɟɖɐ ɘŰŰŮɔɟŰŭɐ Ůχɜ Ů΄ɵγŭχɜ Ű΅ɜ΅ɢɐʃ ŭɘŮɖɜι ʃ ɘŰɒ ΄ɟγ΄Ůɒ ɜŮ ɘŰɛɓΥɜŰŰŰɒ ůɵɓŮɟΥ g΄ɦχɖ. ŦŮ ŭɘŮɖɜγʃ Ů΄ɑ Ůɑɵɵ ŰŰ Ů΄ɑ ŮɑŮŰ Ű΅ɜ΅ɢɐʃ ůŰŰ Ű΅ŰɜŰ΅ɒɵΥ Ůɡɟ ŮɑŮŰ ɢɟɐůχʃ ůgɜɵɣɵɜŰŰɒ ůŰ΅ **Ŧɑɒ Ů 5**, ɦ΄ɵg Ű΅ŰίγɟɜɜŰŰɒɘŰŰɦʃɟɜŮŮɡŰɖůɖʃůŰŰɵɢɟɔɵιɛŮ΅Ů Ű΅ŰɜŰ΅ɒɵΥ(283;286).

	ɟ ɟɵɖεɦʃŰ΅ɖŮɒŰ΅ɒι ɜ ůŰŰɒŮɑι ɜ (%)	
	ɣ ŮŰɟɵɜɜůŰ΅ɦɔɖ	**Ŧɔɒŭɟɵɖɟɛɛgɔɵɖ**
E-test©	28 (31.1)	4 (4.4)
Α΄ɜůχ ɛΥŰχ ůɖ ůŮΥɔŭɟ	9 (10)	0

Ŧɑɒ Ů 4. Ε΄ιɔɘɟɔůɖ ɛŮɖɦŭχɜ εγŰɟɖůɖʃ Ű΅ʃɖ ɵɟɖɐ (Ɣ=90 ůŰŰɒγɢɖ)

ɟ ɜŰ΅ɒɵɜŰɒɦʃ	**ȳɟɵɜ Ůg Ű΅ůɖɖůɖŰʃ (ɛg/ml)**	**ɟ ɜŰ΅ɢɐ (%)**
ɟ ɛɢɜγɒɵɒɘɔɵɖ	<1	0,8
Ŧɔɒŭɟɵɖɟɛɛgɔɵɖ	<2	9,9
ɣ ŮŰɟɢɜɜůŰ΅ɦɔɖ	<8	33,1

Ŧɑɒ Ů 5. Α΄ ɑ Ůι ŰŮ Ű΅ɜ΅ɢɐʃ ůŰ΅ʃɖ Αgɟι ΄ɖ

ŦŰ΅ʃɜ Αɔɔ΄ΥůŰ ŰŰ Ů΄ɑ Ůι ŰŮ Ű΅ɜ΅ɢɐʃ Ű΅g **Α΄** ůŰŰ ɢɟɐůɔɢɜ ɛŮɜŰ ŰɜŰ΅ɒɵΥ ɦůɢɜ ŰιɟΥ Ű΅ggʃ Ůɜɐɔɘɒʃɖ ɘŰŰɒɟΥιůŰŰɒɛŮůŮɣΥɛŮɒŮι ɜ Ű ɦ Ű΅ 1991 (**Ŧɑɒ Ů 6**)

[illegible]	[illegible]	?	MTZ	CLA	AMO
[illegible]	1991	70	MIC_{50}=2	-	-
			MIC_{90}=32		
Cluczynski	1991	50	49%	-	-
ACT-10	1997	35	54%		
[illegible]	1998	43	46%	2.3%	-
[illegible]	2000	66	47	10%	1.5%
[illegible]					
[illegible]	1994	16	75%	-	-
[illegible]	2002			48%	-

[illegible] 6. [illegible]

[illegible] 45-50%, [illegible] 75%. [illegible] OMC, [illegible] 75%, [illegible] [303-306].

[illegible] 1998 [illegible] 10%, [illegible] 48%. [illegible] OAC, [illegible] 50%, [illegible] 1,5% [307-309].

[illegible] (**[illegible] 7**), [illegible] ([illegible], 2002) [illegible] E-test©, [illegible] [287]. [illegible]

ůÚĺ3 T´ə-Ůj·sfj·ɛɛgəœd, Ů·ɛÚŷə-Ůů·ɛŮ ´·sfŮ3ı g ÚĺĺgÍ ɛŮ›Ů3ə-i ÚŮj·dgÍ əŮÚŮ3Ÿ3ə›ů·dgÍ Ú£g Ů3 ə›ĥɔ›ı Ů3Ú£fə·sŮ£ə3ɛ-ı ɔ·Ůɔəœɛıɔ·Ů3ĝgÍ Ú£g Ů3Ů´3Ůĝů£ə3ɛ-i əgj·ɑ›g·ůÚŮ´Ů3ŭ·Ÿ.

Æ£ŮɛɛjəŮə›ĥ Ůɗ·Ůŭɛ, ɛ ɛd·GŮ3·ů·ɛĥ·gÍ Ů3Ÿ´Ú·g3·dgÍ Ů3Ú£ɛɑɛgÍůÚĺ ɀ ŮŮj·ɛ3·ůŮ£ə›ĥə·d ŭŮ3 ¥·GŮ3ůŮŮı g ŭ·ə·Ůĝəj·ɛə·ůɗŮů ¢ ɀ ŮŮj·ɛ3·ůŮ£ə›ĥə·d ŭj·Ů ɛŮŮŸ´Ů ĥ Ů3Ů›ɔ›ɔɐ Úĺĺg·3·ŮŮj·ɛ-ɛɛŸůŮg·ÚĺĺgÍ ɛ¥ůɔ› Ů3Ůj·ɔı 3 3·ŮŮj·ɛŮ3Ů›ɔ›ɔŮůı 3 ůŮ´j·ɛɑĥ3 Ú£´ɛg gŭj·ɛ3·gə›Ů£ɛɑdgÍ ɛŮ ɛŮŮŮə›ə·Ů3·ɛɑɔĥ3ɛ əŮ› ɛ·əj·ɛ6·ɛəŮĥ3ɛ ŭj·Ÿůd (287;310;311). Ō3ŮgÍůŮ·ÚŮj·ɛgÍ ´·sfŮ3ı g´Ůj·Ÿə›d›ɛgÍ ɛd·GŮ3·ůɛĥgÍ ŭj·Ÿůdgd ´Ůj·ə›Ů£ɛ6Ÿ3Ů›Ů3 ÚĺĺŮ Ů3ɛ3·Ů›ůŭ›ůd Ú£ı3 ´j·ɛɑĥ3Ú£ı3 ÚĺĺgÍ Ů3Ů›ɔ›ɔɐgÍ Ů´ĥ ɛɛj·Ůəĥɔɛɛgɔĥ3ɛ ´ɛg ɛŭd›Ůů·ůŮŮdŮůd ÚĺĺgÍ ŭj·Ÿůdgd ɛ¥ůɔ› ŭ3·Ůŭɛɛgəı 3 ɛ3·Ů3ŭı ůŮı3 əŮ› Ů3Ů›ɔ›ɔı 3 (futile cycling) (312;313). ¢ Ů3Ÿ´Ú·g3·d Ů3Ú£ɛɑɛgÍůÚĺ ɀ ŮŮj·ɛ3·ůŮ£ə›ĥə·d ɓŮůɑɛŮŮŮə›ůŮ·ɑŮŮŮə›ə·Ÿ3·Ů3·gÍ Ů´ı ə·Ů3ŭÚgÍ ŭj·Ÿůd›g6 (loss of function mutations) ůŮŮ›ɔɛ3·ɑŭ3·Ů RdxA əŮ› FrxA 3·ŮŮj·ɛŮ3Ů›ɔ›ɔŮůı 3 (314;315). ¢ ´·ə·Ů3·ɛ3ĥŮĺĺŮŮ›3 əəɔ3·ə·ı 3 ůŮŮ›ůd·Ů3·ı 3 ɛŮgɣd·ə-Ÿ Ůɗ·ŮĥŮ Ů3Ú£ůŮŮŮůdgÍ ůÚĺĺ ɀ ŮŮj·ɛ3·ůŮ£ə›ĥə·d (Æj Æ£ 128mg/L) ɢŮj·Ů›Ú£ĺj·ɑŮŮŮ› Ů´ĥ Ů´ı ə·Ů3Ů ŭj·Ÿůdgd Ú£›3 RdxA əŮ› FrxA Ů3Ů›ɔ›ɔŮůı 3, ə›ĥɔ›ɔ Ů3›ŮŮŮŮɛ¥3››3 ůg3ŭgŮůɛı 3 ɛŮŮŮə›ə·Ÿ3·Ů›3.

Æj·Ůg3·dŮ£ɛgÍ	**ÔŮ£ɛgÍ**	**?**	**ɀ ¢Ć**	**CLA**	**AMO**
j Ůj·sůı9Ÿŭ£ɛg	1997	12	20%	8,3%	-
T´ŮŮůı3ə›Ů3·Ÿə·d	1998	21	24%	4,8%	-
ɀ Ů3Ú£ɛgÍ	2000	36	28%	5,5%	27%
ÆŁ-ŮŮůÚj·j	2002	28	12(42%)	4 (14,6)	1 (3,5%)

Ł›ɑ›Ů3ŮgÍ 7. Æ´·d·ŮĥŮ Ů3Ú£ɛɑɛgÍ Ú£g ***Æ´*** ůŮɀ ŮŮj·ɛ3·ůŮ£ə›ĥə·d, T´ə-Ůj·sfj·ɛɛgəœd əŮ› j ɛɛ3·ə›ə·ə›ɑɛd ůÚĺĺ3 Æ›ə›ə·Ÿŭ·ŮůŮ´Ů3ŭ·Ÿ(Ł›j·Ů3·Ů£ə›Ÿ£g3·Ůŭj·ɑ›ɛ3 ÆÆɀ Æ-1997-2002)

Ł›j·ĥůŭŮÚŮ Ů3Ů›ɛɛ3ı d·d·ə·Ůd ´Ů3·ÚŮ›ə›ɛgÍ ÿ·ə·Ů›ÿd Ů3·Ůj·ɔɛi ´j·ɑ›ÚŮı3·dgÍ RdxA ůÚŮ ůÚŮ›ə›ÿG·d ɛŮ Ů3Ú£ɛɑɛ ůÚĺ ɛŮŮj·ɛ3·ůŮ£ə›ĥə·d G›ɑ›j·ɑgÍ Ú£ĺ3 i´Ůj·3·d Ů›ə·Ů›ɛgůı 3 ɛɛj·ŭı 3 Ú£d·gÍ´j·ɑ›ÚŮı3·dgÍ, ɔŮ›ɛ3ĥgÍ´ɛg ůd·ɛŮɑ›Ů›ĥŮ›ɛɛ ůgůů›ɑ›j·Ů›gÍ·ɛ›3·Ů›gÍ ɛŮŮŮə›ə·Ÿ3·Ů›gÍ ůÚ£ ɔɛ3·ɑŭ›ɛ RdxA əŮŮŮə›ɛɔɛgɔ3 ´Ÿ3·ŮŮ ůŮŮ›ə›ɛ´ɛ ´j·ɑ›ÚŮı3·d d ɛ´ɛd·Ů ÚŮ›ə›ə·Ÿ ŭ›ə·Ůů·Ÿ·ÚŮŮə j 3·Ůŭı Ú£ɛɑɛ·G·Ů ůŮŮ›ə›ɑɛd ɛŮ·ɛ›ÿ·Ůj·ə·Ů Ůɗ·Ůŭı Ů3Ú£ɛɑɛgÍ Æj Æ£ 32-64mg/L) ´Ůj·ɛgůə·Ÿ£ɛɛgɔ3 ə›ə›ĥŮŮj·ɛ ůi·3·dŮŮŮgÍ ɛŮŮŮə›ə·Ÿ3·Ůə›gÍ əŮ› Ů3ůd·Ů3ı g Ů3·dŮ›Ů3ə-Ÿ ůŮŮ›ə›ɑɛd (8mg/L) ɢŮj·Ů›Ú£j·ɑŮɛɔ3·ÚŮə Ů´ĥ ůgɔ›əŮ›j·ɛ›3·ŮgÍ ɛĥ3ɛ ůd·ɛŮ›Ů›ə›ɑɛd ɛŮŮŮə›ə·Ÿ3·Ůə›gÍ Ú£g ɔɛ3·ɑŭ£ɛg FrxA ĥɛ›ĥɛ›ɑgÍ əŮ› Ů3Ú£ɛɑɛg RdxA (314;316;317).

¢ T´ə-Ůj·sfj·ɛɛgəœd ŭj·Ů ůŮŮ j·ɑ›ɛůı ɛŮŮŮ Ú£g ***Æ›ə›ɛ›Ů›Ú£j·sŭ£ɛg*** ´Ůj·Ů£´ɛŭ£ɛɔ3·ÚŮŮgÍ Ú£ĺ3 ´j·ɑ›ÚŮı3ɛůi·3·dŮůd (273). ¢ɛj·Ůůgd ůd·ɛŮ›Ů›ə›ɑɛd ɛŮŮŮə›ə·Ÿ3·Ůə›gÍ ůÚ£ ɔɛ3·ɑŭ›ɛ Ú£ĺgÍ´Ů·Ú£ŭgə-Ůj·Ů3ůůŮj·Ÿůdgd ůÚĺĺ3 V´Ůj·sɛɑɛ Ú£ĺgÍ g´ɛɛɛ3·Ÿŭ·ŮgÍ 23S rRNA Ú£g j·ɑ›ɛůı ɛŮŮ£gÍ´j·ɛůŭɑ›ɛgÍ3 gɣd·ə›ĥ Ůɗ·Ůŭɛ ŭ›ə·ůŮŮŮgj·ɛi·ɛŮ›dgÍ Ů3Ú£ɛɑɛgÍ ůÚĺĺ3 T´ə-Ůj·sfj·ɛɛgəœd əŮ› Ú£gÍ Ÿ›ə›ə·Ůgı Ů3Ůj·Ůgd ɛŮ›j·ɛə›ŭŮ£g. j gŮ¥gÍ

ÛœÙəÙÛŸûÛ¥ûgG3ĦÛ[ÛÛf d A2143G (44.1%), d A2142G (32.6%) əÙd A2142C (3.8%), ɛÛ ´ɟɛÙ»Yɟ G3Ú Û ó ɛəÙûɛĦ Û[f A2142G ûÛ Ûûª¥Gd ɛÛ gɣdəv Æɟ Æ. ÕGɛg3 Ù3Ù Ûg Gd Ûn ɛɛɟ¥Ùª¥f ɛ¥d ɛüɛ9´ɛœÙª¥ɛf Ù3œG3Ûgûd f Ûɣ3 ûdɛÛ¥Ùı 3 ɛÛÛÙª¥Y3Ûɣ3 ÛĦûɛ ûÛəÙª¥¥ɟcdɛÙÛ£g ɛ¥ɟɛ6œg, Ħûɛ əÙ»Ù Ûgd ÛÙf ûÛb¥ɛɣdÙ£g 6ªÛ3ɛcĦ3ɛg Û£g ûÛ£ɛYGɛg, Ù»ª¥üÛ3 ¥Gɛg3 6ɟÛª Ûï Ûɟɛɛcv ɣf ɛ¥d ɛüɛf ɟɛgÛœÙf ûÛ[əœ¥ª v üª¥Y3ɣ ûd (318-320).

ʒ ÛÛ[3 Ûgɟ ÛœÙGɟv ûd Ù3Ûª6œÙª1 3 c9ÙÛ[3 Ûª ɟœɣ ûd Û£g **A´** ûÛ[dÛɟÙ ÛœÙ£g ¥ª1ɛggf əÙª Yª1ª¥3 ÙûdÛ3Ûª1 3 Û£g ũÆÆ, Ù3Ù£¥3ÛÛÙª ´ÛɟÙª1Ûɣɟɣ Ùï3dûd Ûɣ3 üÛª1ÛÏ3 Ù3Û£GɛfG ûÛÙ GɛɟdcGï ɛÛ3Ù Ù3Ûª6œÛª1Y. ÕÛûª1, ûÛûg3ügÙûɛĦ ɛÛÛ[3 Ù ɛª1ɟg´£cɟYúdûd Û£g cɛ3ª1ü¹1 ɛÙÛ£f Û£g ɛ¶ɟɛbœg, ɛ¶ ɛɛɟ¶9Ù»¥f ɛ¥d ɛüɛ¶ Ù3Ù£¥3ÛÛÙª 3Ù bÛª1Ûª1 ûɛg3 Û£gf Ûɟĥ´ɛgf´ɟɛûüª¶ɟ¶ûɛɛï Û[f Ù3Û£GɛfG. Á´ó´ª¥ɛ3, dÙ Ù3ª¶´ɛ¶d ɛï 3 3¥ɛ9 Ù3ª1Ûüª¶Ûɣɛ¥3ɛ9 ûÛĦGɛ9 c9Ù Û[3 Ù3Y Ûg3d ª1Ù3ɛï ɟc¶ɣ3 dÛɟÙ Ûgª1ɛ3 ´ÛɟÙ3Ħ3Ûɣ3, ĥ´ɣf Ù3ÙûÛ£ª¥ɣ3 ɛd GÙ3¶ûɛ1 3 Û[f´ɟɛûª¶ĦªdûdfûÛ£ Ûª¶f ɛ¶ª¶ª, Û[f GdɛÛª¶ÛÙ3dÙf, Û£g ûgûÛ£ɛÙÛ£f Ù¶ª¶ɟûÛɣf Û´ɛg-4, Û[f ɛgɟÛYûdf ªÙ3 Û[f ´ɟĦûªdɣdf ª1Ù3Ù¶ª1b6ª¶ɛf üª¶ûdÙ¶1 3 ª1ÙÛĦ3Ûɣ3.

7. Tɛ ûÛ£ª¶Ħcdûd üɛª¶ɛÙû¶1 3 Ù3Û£GɛfGÁ´ ûÛÙ3Û6œÛª¶Y

¢ ɛɛɟ¶9Ù»¥ Ù3œG3Ûgûd Û[f Ù3dÙª¶Ûª¶Ħ Û[Û[f ûÛ[3 Tª¶ÙɟĦɟɛɛgª¶œd ɛ´ɛɟÙû3Ù cœÙª¶ɛÛ´ɛª¶ª¥f ÛÛG3ª¶ª¥f. B9´ª¥ɛ3 ûg3dfû¶ɛy3Ûf ª1Ù3 Û¶ÛɟɛĦûɛÛf ÛœÙ ɛ9 RFLP (Restriction Fragment Length Polymorphism), d RT-PCR (Real Time-PCR), d FISH (Fluorescence *in situ* Hybridization), d PCR-line probe assay, d 3ô-mismatched reverse primer PCR əÙd Double Gradient-Denaturing Electrophoresis (DGDE). ÿ ə¶f Ûgª¥f üœɛg3 ûgɛ6ÛÛª¥Ù ɛÛÛª¥ûɛÛÛÙ ɛÛÛ£f ɛÛdĦüɛggf üª¥Y9gûdf ûÛY9ÙɟÛ (agar dilution), ûÛüª¶ədÙ (disk dilution) əÙª E-test© (321). ¢ÙəĦûÛ[c9ÙÛ£f ɛɛɟ¶9Ù»¥f ÛÛG3ª¶ª¥f əgɛÙœɛ3ÛÛª Ù Ħ 9.86$ (´ÛɟªœÙɛ6Ù3Ħɛ¶df əÙª Û[f üª¶ÙüªÙûdÙf Ù3Ù¶ɣcɛf Û£g c¶3ÛÛª6ï gª¶ɛï) Ù»ª¥Gɣɟɑf ÛÙəĦûÛ[Ûɣ3 controls, ɣɣf 13,98$ Ù3Y Ù3ª¥ÛÛûd (Û£ ClariRes© kit Û[f Ingenetix ´ɛg Gɟdûɛɛ´ɛª¶dəÙûÛ[3 ɛÙ3ª¥Û[ɛÙf əÙª ¥GÙ3 əĦûÛ£f 650$ c9Ù 50 üɛª¶ɛÙûdÙf ´ÛɟªœÙɛ6Ù3ɛɛ¥3ɣ3 Ħɛɣf əÙª Ûɣ3 controls), ɛÙGɟĦ3ɛ ¥ª¶üɛûdf Ù ɛÛÛª¥ûɛÙÛ£f Ûf 24 ɪ ɟÙf (Ûï ô ĦûɛG3 Gɟdûɛɛ´ɛ9ÙdÛÛª Ùg ÛĦɛÙÛ£ ûï ûÛ[ɛÙ Ù3Ù¶ɣcɛf c¶3ÛÛª6ï gª¶ɛï), Ù3ï ɛ9 Û£¥f c9Ù əÙª¶ª¥ɟc¶9Ù Û£g ɛ¶ɟɛbœg Ùœª¶Ù 8,66$ əÙª ɛ Gɟĥ3ɛf ¥ª¶üɛûdf Ù ɛÛÛª¥ûɛÙÛ£f ű dY3Ù9 Û£f 2-2 ½ Ù9üɛɛ¥ûÙf. ¢ɛ əĦûÛ£f Û£g E-test© Ûɣª¶ɛf´ɟɛûüª¶ɟɛÛÛª¶ûÛÙ 6,90$ Ù3Y Ù3ª¥ÛÛûd.

8. ɟ 3Û£ɛÛÛï ´ª¶ûd Ù3dÙ9Û£ª¶ɛf ª¶ɛœɣ 3dfÙ ĦÁ´

¢ɛ Ûɣó ª¶Ħ ûGɛɛÙ ɛÙb¥ûd Û[f K¶Ùɟªɟɛɛgª¶œd ûÙ ûg3ügÙûɛĦ ɛÙ¥3Ù Ù3ÙûÛ£ª¥Ù Û[f Ù3Û£dÙf ´ɟɣÛ£3œɣ3 (J J U PPis) əÙª Û[f Gɛɟɛcdûd ɟ ɛɛ3ª¶ª¶ª¶œdf ɛ Ù3Ùª¶ÙÛ£ª¶Y ʒ ÛÛɟɛ3ª¶üÛ£Ħª¶df, Ù ɛÛÛª6ÙûÙ ûg3ɛdɣf Û[f ´ɟı Û[dÛɟÙ ûgÛ£ɛ Ùcɣcɛ, ÛĦûɛ ûÛ[3 Ágɟı ´d (322) ĦûɛəÙûÛ£f ¢U (323). ¢ɛ ûGɛɛÙ Ùgª¶Ħ ´ɟɛÛÛª6ÛÛÛª¶Gɣɟɑf 3Ù cœÙª¶ɛG3 Ù3ª¥ª¶ü¹ Ù3ÙÛ¥ûÙ£f Ħ´ɣf d

əÜə-əyɟɔÛɸÜ, ÜɟəÛnÜŧ ´ɛûɛûÜɱ ÚŕɜÜəÛdÛəÜəı ɜ ûÜŧɜ ´ə¬d¬gûɛɱ ûÜÛə-Ûŧıɜ ûÜ¬ɜ T¬əÜɟɤdɟɛɛgəœd ɜŬÛœÜəYÚŕ ŬɱɱŬ 20%. ⊎ÜɟɱÜɸɛɵÜɟɛɤyɡɛÛə-yÚ¬ÜÜÛɟɤyúÛɟÜə ´ɛə-i gɣd¬Y´ɛûɛûŕ¬Ûəɟœɤûdɡɡ (ûgɛɜY Y3ɤ Úŧgɡɡ 90%), Ú¬Ŭ´ɛûɛûŕ¬YÜgÚ¬Y´ɛÚ¬ŭÜə ÛɱɱÛdÛəÜə ûÚ¬ə-əəəə ´ɟY3d əÜəɛÛÚ¬ ŭəÜɟəı ɡ ÜgɜÜəɱɛÛəd ÜəÚŧɛgɛ ûÚ¬ɜ T¬əÜɟɤdɟɛɛgəœd û´Y3əŬÜəyɟgɛɜÚÜə´Y3ɤ ŬɱɱÚŧɛ 70%. (324) T¬Üə-ÚÜɟŬŬ ɛÚÜə¬yûɛÜÚÜyɡɛgɜ ´ÜɟÜÚ¬ɟdÛûɛÛÚ¬ɡɟəûd Ú¬ɡə¬Ûɱɱɛ¬ÛdɡŭəÜûɛgəə¬ɡ dÛɟŬ ÛûÜɡ (5 ɛyɟÛɡɟ ɟ ⊎ ɛÛɟ ɛɜɜəəə¬œd, əÜə ûÚ¬ ûgɜyɡÛəÜ 5 ɛyɟÛɡɟ ɟ ⊎ ɛÛT¬əÜɟɤdɟɛɛgəœd əÜə ɀ ÛÚɟɛɜəüÜŧɱə¬d), ´ɛg ûÛ ÜɟəÛÚ¬ɡ ɛÛə¬yÚÚɡ yɡÜə ɓɟÛûÛı ɜÜ g´ÜɟyɡÜə Ú¬ɡ ə-əÜûəəɛɡ Ú¬ɟ´ə¬ɡ dÛɟŬ ÛûÜɡ ûÛÜə¬əəɛggɡ əÜə´ÜəüəY (ɛɜ´ÜɟəûûɱÚÜɟÛɡɡ ɱɛɤɡ ŬɱɱÜgÚ¬ɡ Ú¬ɡ ɛÛə¬yÚÚɡ´ɟɛyɟɡɛɜÚÜə ŬɱɱɛdÜɡı ɟ (325)). Á´ɑ ŬɱɛÚgɡdÜɡÚŧɡ´ɟı Úŧɡ ûgɛɛÜÚŧɡ, ûgɜəûÚŕÚÜəd ɡɛɟəɔdûd üÛıÚÜɟɛg´ɛg ûgɜəɛdɤɡ´ÜɟəəÜɛɓY3Ûəɓəûɛɛi¬dəœ ɛÛ2 ÜəÚ¬ɓœÚ¬əY (ɱ´ɤɡ ɛÚÜɟÜəgəə¬œd əÜəɀ ÛÚɟɛɜəüÜŧɱə¬d), əÜ¬ıɡ əÜəɟɟ ɔəÜ ÜəəÜə¬ɛ´ɛ¬dûd Úŧɡ ɔÜûÚɟəəi gɔɟɛi. ɛɛ ûgɛɛÜ ÜgÚ¬ɱ, ŭgûÚgɛı ɡ, ɣɡÛə ´ɛəə-yɡ´ÜɟÛəəyɟɔÛɸÚɡ əÜə ÛœÜə ÜɟəÛÚŕ´ÜɟɑəəəɛɛÛəœ ɛÛəɣd ÜɟəÛÚı ŭəûəɑɤ ÜəY d¬ɛɣɟÜ d¬ɟÜ ÛûÜɡ. ŌɡÛəɔœÛə´ɟɛû´Y¬dÛəÜɔəÜ Ú¬ɱ ÜəɣɛÜ ÚŧɡÛəı ŭd¬ɛəgɟɔəd¬dəÛ(əÜəɣɡÛə´Yɟ Ûəɣɔəɟəûd ûÚɱɡ¢⊎ɟ) ŭəûəœ ´ɛg ´ÜɟəɣɡÛəÚŧɛ ɓəûɛɛi¬dəœ əÜəÚÜŭi¬ɛ ÜəÚ¬ɓœÚ¬əY ɛÜɛɑ ɛÛûəɛ´ɱ Ú¬ɱ ɛÛɑ¬ûd Úŕɜ ÜəY d¬ɛɣɟÜŭəûəɑɤ ə¬Üə, ûgɜÛı ɡ, Ú¬ɱ Ûgəɛəɱ ÚÜɟd ûgɛɛɱɟűɤ ûd Úŕɜ ÜûdÛəı ɜ (326). qûÚɱûɛ ÚÜ ûɡɛɛÜÚÜ 2dɡɡ ɔɟÜɛɛɛɡɣɡɛgɜ ɣɜÜ´ɛûɛûÚɱ ÛɸÚgɡdÜɡ´ÜɟɑÚŧ 70% əÜə, ûgɜÛı ɡ, ÜɟəÛÚŧɑÜûdÛəÛɑɡ d¬Ü ɓɟÛd¬ɛi¬ɜ ɛÚÚŶ ÚÜ ŭi¬ɛ ûɡɛɛÜÚÜ ÜgÚŶ ɜÜ yɡɛgɜ Ú¬ɱ əÛɔɱɛÛəd ÜəÚdÛəÛəɛə əɛœɤɜd Ŭɱɱŧɛ ɛɔəɟɱɓɔœg.

ÆəəɱɔɛəÚ¬ɡ ŬɛÚgɡdÜɡÚŕɜ ûɡd¬ɛYÚŕɜ Ûəɟœɤûdɡɡ ɱ´ɤɡ ÜəÚűɣɟd¬əÛəÜə´ÜɟŬY3ɤ ÛɑəÜə ´ɛəəŬəœɑ ÜəəY ɱəɛə ÚÛəəY əÜÚÜəɛɔɛgɜ ûÚ¬ɜ ÜəÛŬɟəɛ ûgɔəɣɜÚɟɤûd Úŧɡ ŭɟÜûÚəɛi űÜɟɛYəɛg ûÚŧ ɛɔəɟɛ´ÜɟɔÛYəəɛɜ Úŧɡ ɛɔəɟɛɓœg. ÆÛ´ÜɟɑÚŕûd ŬɛÚgɡdÜɡ əÜə Úŧɡ ŭÛıÚÜɟɛg ûɡɛɛÜÚŧɡ, Ŭ ÜəÚÛdÚÜəd ÜəœəɱɔdûdÚŕɜ ÜəûÛəÜəÚŕɜ Ú¬ɡ´Üəɟœɤûdɡɡ, Üə ŭd¬əÜûɛ ɛ ÜûdÛəɛɡɣɡÜəÛ¬ɜ ɤűÛə¬dÛə´ɟÜɛÜÚəY Ŭ ɱ Ú¬ɱ Üəɟœɤûdɡɡ (´.ɢ. g´YɟɡÜəÛ ɔÚÜəÜəɛ ÜəY ɔəÜÛəɟœɤûdɡɡ ûÛÜɡ ÜəÜɛɑ ɛÜûdÛəɛ ɛÛÜəÜɛ ɛÛÜdÛəɛ ɛÛÜəÜɛ ɛÛÜdÛəɛ ɛÛÜəÜɛ ɛÛÜ

əgɟɑɤɡ ɔɘŬ Ůđȝ ȚəŰɟɘɑɟɛɛgəɑɒd, Ůȝ ɓɟȕđŮȕ ŮgŰəȕɑđqůɒŬ ůŰȿ ***Ƙ´***, ŰɦŰŰ ɛ´ɑɟȕȕ ȝŬ ŮŰȝŰɑɡdůɛɛ´ɑɘqđŮȕ Ɛđɛůȕ ȝŮŰŰəɤ ůŰɦůɑɛ ɦŰȕůŰđ Ůȝ əɦɔɤ ɛůəɤŰđ ɓɟɤɣđqəŮ ůgɑȝȲŰȝŰȿɑɛ ůŰđ ɀ ŮŰɟɑɘȝəŭŰɛɦəqəŰŰđȝ ȚəŰɟɘɑɟɛɛgəɑɒd ŰəɦɛŬəŰəɦŰŰȝ ŭŰȝ ´ŮɟɘɷŰɛɓȲȝɑɘȝŰŰȝ ůŰŰůɑɛɛŬŰŰŬŰ ŭiɑɛ ŰgŰȲ ŰȝŰȿɓɷɛŰɷȲ [328]. ÓȝŬ ŰəɦɛŬ ɛŮɷɛȝɣəŰđɛŬ ŰđđɡɛŮđɦŭɛgŰđɡəŰəəɷɟɔŮȕŰɡŮɑŰəɦŰȕɦɛŬ əŰə đ Ůɟɔ ŰŮŭŰđɟɷŰəɛ ŰŰəɛdɟɑɑůđ ŰđɡŮgŰəůdqůɒŬɡ ůŰŰ ŰȝŰȿɓɷɛŰɷȲ ´ɑg dŬ ɑɟdůɛɛ´ɑɘqđɑiȝ, ŭŰȝ ŮȝŰŭúŰəɑŮəŰđȝ ŮɷŰgɑdŬ ŰɛgůɑɛɛŬŰɛgɡ. ŭəŬ Ůȿ əɦɔɑ ŰgŰɦ ɑɟůɛɣȝŮɡɡ əŬŰŮgdgȝŰɟɟŮɡɡ ɛŭdɔdůɡ ŭŰȝ əɟɑɑɛgȝ ŬŮɟŰđŰđŰđ Ůđȝ Ůɷɑɔəɛ ŰȝŰȿɓɷɛŰɷȲɩȝ ɛŮ ɓȲůd Ůȿ ŰȝŰȿɓɷɦɔɟŰɛɛŬ[329].

9. <u>ŪŮɟŬ ŮgŰɷəȲůɑɛɛŬŰŰ´ɛg ɣɑɛɑȝ ɑɟdůɛɛ´ɑɘqđŮȕ ůŮŰȝdŮȝŰɷəɛ əɑɑɤɟȝdŬ ɦ Ƙ´</u>

ƉɑɛɛŬŰŰɛŮɓȲůd Ůđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd

¢ ş ŮɓɑŭəɑɛȝŭŰůɑɒd ŮɒŭŰȝ ɛdŬ Ůgɟɣɤɤɡ űȲůɛŬŰȿɡ əɒɑɑɦȝɔd. Ƈɛ´ɑŭɑɑŭȝ Ůđ ůiɛȝdŮůd Ůȿg ɓŭȝŰđɟɤɷŭŰȝɑiȝ DNA əŰȝ Ŭ ɑɟɟɟɑŭȲŰŰȝəŰəȲ Ŭ ɦ Ůȿg ůŰɦɛŬŰȿɡ. qɟŬ ɦ´ɤɡ əŰȝ ´ɑəəɣɡ Ȳəəůɡ əɒɑɑɦȝůɡ ɣȝŭȝŰȝ Ůȿg Ƙ´ əŰȝ ɣɑŮȝ ůgȝŮɟɔɒɛ ŭɟȲůd ɛŮŰȿggɟ ɟ ɟ Ʉ. ʉɟɦɓəɔdɛŬ ´ŮɟŮɛɣȝŮȝ ŰŰɑɣɤɡŮgȝŭȝɦɛŮȝd ŭɑɑɛ ´ɑg əgɛŭɑŮŰŰȝůŰɡůɡŭəȲŭɑɟůɡ ɛŮəɣŰŰɡ(əŰȝ´Ůɟɷɑɑɣɡ) ŬɦȝŰ-31% [330].

ƉɑɛɛŬ ɛŮɓȲůd Ůđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd (ɛŮɟɟʉ əŰȝ ɟɛɑɷəɷəɔɑɒd) ɔɘŬ 10 ɛɣɟŮɡ ´ɣŰgɑŮ ŮəɟɑɛɤůdůŰȿ 76,2% ŭůdŮȝɩȝ, ´ɑg ɐŭdŮɑɑŭȝ ŬɛŰŰɡɑŮȝůŮŭiɛ ȲəəŬůɑɛɛŬŰŰ(´ɑg ŭŰȝ ´ŮɟɷŮɑɑŭȝ Ůđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd). ƈɑɒŭȝ ůdɛŬȝŰɷɦɦ ɦŰȝ ŮəɟɷɛɩdđəŮ Ůȿ 92% Űɤȝ ŭȝdŮəŰɷəɩȝ ůŰđȝ ȚəŰɟɘɑɟɛɛgəɑɒd əŰəɀ ŮŰɟɑɘȝəŭŰůɑɒd ŰəəȲŮgŭůdqŰɤȝ ůŰđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd [331].

ȳəŮɡɑɛ əɑ ɛŮəɣŰŰɡɣɑɛɑȝ ŭŮɒŭəŮđȝ ŭŰűȲəŮəŬ Űɤȝ ůɑdɛȲŰɤȝ ɛŮɓȲůŮəŮđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd. qůŰɦůɑ đ ŭȝȲ Ůgȝɑd ŭȝŰȿɑɛɛɡ ůŰɡɡ əɒɑɑɦȝůɡ ɔɒŰŰŭə ´ɑəi ɔɟəɔɟŬ ɷŭɑɤɡ ůŮɑɩɟůɡ ɦ´ɑg ɑɟdůɛɛ´ɑɘqiȝŰŰə ůŮɛŮəȲəd ɣəŰŰůd ŰŰŬȝŰȿɓɷɛŰɷȲŬgŰɛgŰđŰŰȲɔdɡ(əŰəɔɘŬȲəəůɡŭȝŰŰůɡ´ədȝ ŰđɡŮəɟɑɛɤůdɡ ŰɛgŰ ***Ƙ´***). ƉɡȝŮɩɡ´ɟɛŰŰəŮŰŰə đ ɑɟdůɛɛ´ɑɘqůd ŰɛgűŬɟɛȲəɛg ŭgŰɛiůŰȝ đŮŬŰ ŰəŬ ŰɟđŰđɡ ɔɟŬɛɛɛɡ, ɷŭɑɤɡ ɛŮŰȲ ŮɷɓŮŭŰɑɤůd ŰđɡŮgŭəůdqůɒŬɡ Űɛgɛɷɟɛɓɑɛg ůŰđ ş ŮɓɑŭəɑɛȝŭŰůɑɒd. ƉɛđɛŮəɩȝŰŰə ɦŰȝ ůŰɛɡ´ŮɟɷůůɦŰŰɟŮɡ ɑɩɟůɡ Ůȿ ´ɑŭɑůŰɦ ŭȝŰȿɑɛɛɡ ŰəɒŭəɛŰŰ ɛŮɓȲůd (´ŮɟɑɑŰȿ 17%), ŭəəȲŬŭȝ ɣɑŮȝůŭŮgəɟɷɷůdŮəɩŭȝ´ɟɦəŮŰŰə ɔɘŬɛɷŬŭȝŰȿɑɛɛ ŰɛgŰí´ɑg ŰđɡŮ ȚəŰɟɘɑɟɛɛgəɑɒdɡ (ɦəɑg ɐ ɑgŭȲɷȝ) ɐ ɛŮɟɷɐɐɡ ŭȝŰȿɑɛɛɡ ɦ´ɤɡ ŭȝŰŭíɣɟŰŰə ůŰđ ´ŮɟɑáŰɤůd ŰđɡŮ ɀ ŮŰɟɑɘȝəŭŰůɑɒdɡ [332].

ɀ ɷŬȲəəd əɷɑɑɦȝɔd ´ɑg ɣɑŮəɛŮəŰŰđŮəůŮəŭȝŰəd ũəŬŰáíəɑɛȝŭŰůɑɒd, ´ɑg ɓɟɣɣdđəŮȝŬ ɣɑŮəəŬəəŭȝŰȿɑɛɛ ŬɛŰŰɡɑŮȝůŮŭiɛ ůŰđȝ ŮəɟɷɛɩdđəŮ ůŰɡůɡŭəȲŭɑɟůɡ ŰəɒŭəɛŰŰ ůŰđ ´ŮɟɑáŰɤůd ŰđɡŮ (100% ŮəɟɑɛɤůdůŰȿ). ɟ ȝŰđŮŰŰŰ, ůŰŰŬ ŭȝdŮəŰɷəɩȝŰŰȲ ůŰŰəɣɑŮd đ ŮəɟɑɛɤůdůŰȿ ´ŮɟɷɷɟɦɦŰŰə ůŰȿ 33% [333].

Ëcæ ε ÙÚÙ ε Ůb Ÿůd Ű[Λsű Ůε´ ɛgŰœd

¢ Λsű Ůε´ ɛgŰœd Ůœ Ůə yɜŮ ů´ Ůɣɛ´ɝ Ůɟ sügəɶ-´ Ůɟ Ÿɔʏɔɛ Ű[gƒ Λsű Ůε gəœdgƒ-S, ´ɛg ügɟ Ů ε yůʏ Ůɜ Ůů Ű ε əæg Ű[gƒ ¢ *.pylori* DNA ´ɛəgε Ůɟ Ÿůdgƒ. Ëɟ ɦəŮ Ű Ůə ɔəŮ yɜŮ Ůəɟ ɓɦ ű Ÿɟ ε Ůəɛ ´ɛg ŭŮɜ ɓɟ ɑůə Ů Ű Ůə ů Ůɦəɶ Ůgƒ Ůgƒ ɢ ɹ Ůgƒ (ɦ´ʏgƒ ŭŮɜ əgəəɛű ɛɟ Ůůə Ůə ů Ű[ɜ Æəə Ÿü Ů). Æœ Ůə ɔŮɜəÞ Ÿə Ůə Ÿ Ůə Ůɜ Ű ůə Ůɜ Ű ů ε Ů Ůə yɛəgɜ ´Ůɟ əɟ Ůű Ůɑ əŮə ůɛɓŮɟ ygƒ ´Ůɟ Ůɜ yɟ ɔŮŮgƒ ε Ů Ÿ Ű[æʏd Ůɛg ɦ´ʏgƒ əɶůəɛ´Ůɜ dŮə Ůə dɟ ɛɛɓɛ´Ůɜ dŮ (334). ¢ɛ ***Æ´*** Ůœ Ůə Ůg Ůů dd[Ůɛ ů Ůɛ Ůə Ű ɓəɛ Ű ɓɦ Ůg Ű ɦ əŮə ŭŮɜ yɛəgɜ ´Ůɟ əɟ Ű ɑ´Ůɟ ɝ Ű ů Ůəgƒ Ůə Ÿ Ű gɜdgƒ Ůə Ű ɛgəɛgƒ. q ů Ű ɦů ɛ, ɛ əɨɟ ɜɛgƒ əɦɔɛgƒ Ű[gƒ ɛd[Ůgɟ Ůů Ű gɟ ɛ ů dgƒ Ű ɛg ů Ůə Ůə Ű ɑ ***Æəəɛɓ Ůə Ű[ɟ sü ɛŮə ɦ*** ű Ÿɟ ε Ůəɛ Ůœ Ůə d dŮɟ d[Ű əɛ ´ɛd Ůə ɦ Ű[Ű[gƒ Ůə Ÿ Ű gɜdgƒ Ůə Ű ɛgəɛgƒ Ű ɛg ɀ gəɛɓ Ůə Ű[ɟ sü ɛœg (Ű ɦů ɛ Ű ɛg əəŮů əɛɨ ɦů ɛ əŮə Ÿ Ű g ´ʏɜ ů Ű ůə Ű ɛg) ů Ű[Λsű Ůε´əœd[, ε Ů Ű[ůgɛɜəɛ gɟ d ů əɛɛ´ɛəd ů[Ű ɛg ůgɔɔ Ůə ɛɨ gƒ ´ɟ ɛgƒ Ůg Ű ɛ Λsű Ůε´ɛg Ű œdgƒ.

¢ Λsű Ůε´əœd[Ůœ Ůə yɜŮ Ÿəəɛ ´Ůɟ Ÿɔʏɔɛ Ű[gƒ Λsű Ůε gəœdgƒ cb ε Ů Ű ɦ´ɛ ŭɟ Ÿů dgƒ ´Ůɟ ɦ ɛɛ ɛ ε Ů Ůg Ű ɦ Ű[gƒ Λsű Ůε´ɛg Ű œdgƒ. Ëɟ Ů Ű Ű[ɟ ɛd[əŮ ε Ů ʏ ů[Ű ɜ ***Æəəɛɓ Ůə Ű[ɟ sü ɛŮə ɨ ɜ*** Ůɜ Ű ů ʏ ε Ÿ Ű ɜ ů Ů Ű ů d Ůɜ Ů ů gƒ ´ɦ Ůɜ Ű ü gε Ű ə ɛ Ůɔʏ d[əŮ ɦ Ű ů ɛ *in vitro* (335).

œgů Ű gɑ gƒ, ´Ůɟ ɦ Ůə Ű ɛ ű Ÿɟ ε Ůəɛ Ůg Ű ɦ Ůœ Ůə ´ɛœ ű d[ɜɦ əŮə Ů gɟ ɛʏ ů[ɛ gƒ ü ɛŮ Ű Ů ɛɛ yɜɛ ů Ů ů cʏ ů d[ε Ů Ű[ɜ Λsű Ůε´əœd[, Ű Ű əəœəÞ Ÿ Ű ɛ Ű Ə ʏ ů ε Ű Ű Ű Ű ɦ Ű[cɟ ɛ ů d[Ű ɛg Ůœ Ůə ´Ű ɔ Ÿ. ¢ Λsű Ůε´əœd[ů Ů ŭɦ ů d[450 mg əŮə ů Ů ů gɜ ůg Ű ů ε ɦ ε Ů Hů ɛ ε Ů ɟ Ű ɛɦəd[əŮə ¢ Ű Ű ɟ Ű əgəœd[Ə ɟ ɜɑ ɜ Ůə Ű ɛ ***Æ´*** ů Ů ´ɛů ɛ ů Ű Ÿ 32,1% əŮə 41,6% Ű ɔ Ű ů d Ə ɑ ɜ Ű ɜ Ű Ű ů Ű ɛ ɜ ɔ Ű (336) (əŮ Ű Ÿ ´ɟ ɦ d Ů ů d[ɔəŮ 2^{dgf} əŮə 3^{dgf} ɔɟ Ű ɛ ɛ ɐ gƒ d Ů ɟ Ű Ůd Ű gƒ Ű ɜ Ű Ů ů Ű ɛ ɜ ɔ Ű).

Ëcæ ε ÙÚÙ ε Ůb Ÿůd Ű[ū ɛgɟ Ű ɛəɜ ů ɦɜd[

Ëɟ ɦəŮ Ű Ű ɔəŮ ε əŮ ?əŰ ɟ ɛ ű ɛgɟ Ÿɜd[ε Ů Ůgɟ ɨ ű Ÿů ε Ű, ŭɟ Ű Ů ɛ ɛ yɜŮ ɜ Ů Gram d Ű ɛ ɨ ɜ əŮə Ű ɟ ɜd[ɛ ɨ ɜ ɓŮə Ű[ɟ sü œɤɜ əŮə ´ɟ ɤ Ű ɦ ɛɤɤ ɜ. œgɟ Ű ε yůʏ ε d ɔŮɜ ů ɛɛ ɨ Ů ɜ Ů Ů ɛ ɛ əɟ ɔɛɟ ɔŮɜ ů ɛ ɨ. Æœ Ůə ŭɟ Ű Ů ɛ ɛ yɜŮ ɜ Ů Ů ɛg ***Æ´*** əŮə d Ů ɜ Ÿ Ű gɜd Ů ɜ d Ů Ű ɛ ɨ ɜ ů Ű Ű ɛ ɨ ɜ Ůœ Ůə ů´Ÿɜ ɔŮ. Æœ Ůə Ů ɜ Ů ɟ Ű Ű ɛ Ÿ ŭd ε ɛ ű ɛəɛgƒ ů Ů´Ű ɤ ygƒ ɑ ɨ ɟ Ű gƒ əɦɔɤ Ű ɛg Ů ɜ Ů ɟ Ű Ű ɛ Ÿ ɑ Ű ɛd əɛ ɨ əɦů Ű ɛggƒ, Ůəɛ Ÿ ɦɑɛ ů Ů´ɟ ɛd ɔ ε yɜ Ůgƒ, əɦɔɤ ´Ůɟ Ů ɜ Ů ɟ ɔŮɜ ɨ ɜ. Ëɟ Ů ɜ yɟ ɔŮ Ůgƒ Ů ɛ ű Ů ɜ ɔ Ű Ůə ůgɑ ɜ Ÿ əgɟ ɑ ɤgƒ Ů Ű ɦ Ű ɛ ɔŮů Ű ů ɜ ɔŮ Ű ɛ ɨ ɜ ů Ű ɛ ɨ ɜ ɦ, Ů ɜ ɨ d ´Ůɟ Ÿəəd əd[əɤɣd[Ůəɛɦəɛ ´ɟ ɛəŮəů Ů ɜ Ű ů ɟ Ůů d[qəů ɛgəű ɟ Ÿɛ d gƒ. ɟ ´ɛɟ ɟ ɛű Ÿ Ű Ű ɔ ´Ű ɤ ɑ Ÿ ε Ů Ű Ÿ Ů ɦ Ű ɛg ů Ű ɦ ε Ů Ű ɛgƒ əɤɣd[(337). ¢ɛ Ů ɜ Ű ɛ ɓ ɜ Ű ɛ ɦ Ůg Ű ɦ ŭŮɜ əgəəɛű ɛɟ Ůů ů Ű[ɜ Æəə Ÿü Ů.

10. ò əəÙ´ɟɛůÙɔɑůÙ

Ʉɟɛɓɐ Ɏ. ɸŮ´ɟɛɓɐŮɐƳɛ´ɛɟɛɨɜŮɓɛɖɖɐůɛɡɜ ɛŮŭɨɛ Ű̃ɟɦ´ɛɡɡ:

-ʐ yůɤ ɛŮɑɤůɖɡ Ű̃ɛg ɓŮɜŰ̃ɖɟɜŭɜŮɜɛɨ ű̃ɛɟŰ̃ɐg. ƁŮ ɛŮɜƴŰ̃ɖ ɣɢŮɜ ŭŮɜɢɖŮɑ ɦŮ̃ɜ ɖ ɢɛɟɐɔɖůɖ ´ɟɛɓɐŮ̃ɜɪ ɜ Lactobacillus spp ɛɣůɤ əŮŰ̃Ű̃ɜƳɜɤůɖɡɔɜŮ̃ɨɟŰ̃ɖɡ ɛŮɜɪ ɜŮɜŰ̃ɖɜ Ű̃ɐɛɐ ůŰ̃ɖ ŭɛəɐɛŮ̃ɑůŮ Ű̃ɜŮ ɜɛɐɡ (´ɛg ŮɷŮɜ əŮɜ ŭŮɜɷŰ̃ɖɡ Ű̃ɛg ɓŮɜŰ̃ɖɟɜŭɜŮɜɛɨ ű̃ɛɟŰ̃ɐg), Ű̃ɜɪ ɖ ɢɛɟɐɔɖůɖ Ű̃ɛg g´Ůɟəůɛ Ű̃ɜɛg gɔɟɛɨ əŮɜəɜɣɟɔŮɜŰ̃ɡ´ɟɛɓɐŮ̃ɐɪ ɜ ɛ´ɛɟŮɑɜŮ ɓɛɖɖɐůŮɜŰ̃ɖɜ Ű̃ɜɟɑɛɤůɖ [(338)].

-ʐ ŮŰ̃ɖ ɛŮɑɤůɖ Ű̃ɤɜ ´Ůɟ Ű̃ɜŮɟɔŮɜɪ ɜ Ű̃ɤɜ ŭɜŰ̃ɦɟɤɜ ůɢɖɛƳŰ̃ɤɜ Ű̃ɜɟɑɛɤůɖɡəŮɜəgɟɑɛɡŰ̃ɖ ůɨůŰ̃ɖɛŮ, ɓŮɜŰ̃ɪ ɜɛɜŰ̃ɡƴŰ̃ůɜŰ̃ɖ ůgɛɛɦɟűɤůɖ Ű̃ɤɜ Ű̃ůɖŮɜɪ ɜ ůŰ̃ɖɜ ´ɟɛŰ̃ɓɐɦɛŮɜɖɖŮɟŮ Ű̃ůŰəŮɜůgɜŮɪ ɡŰ̃Ű´ɛůɛůŰƳ Ű̃ɐɟɑɛɤůɖ.

¢ ŭɘ´əɐɐ dŮɟŮ Ű̃ůŰ, ɢɛɟɐɔɖůɖ ŭɖəŮ̃ŭɐ Ű̃ɛg ŮɜŰ̃ɓɐɛŮ̃ɐɛɨ (ůgɜɐɖɤɡ ƬəŮɟɛɖɟɛɛgəɛɑɖ ɐ ɟ ɛɛɜɘɐəɘəɛɑɖ) ɛŮɟ ɟ Ʉ, ɣɢŮɜ əƳɓŮɜ ɣɔəɟɛůɖ ŮɦŮ̃ɜ Ű̃ɛ FDA ůŮɜ dŮɟŮ Ű̃ůŰ Ű̃ɐɟɑɛɤůɖɡ. qŮɜ ɢɟůɛɛ´ɛɘůŰ̃Ű̃ɜ ɦɛɤɡ ɔɛɤůɖ ŮɛŰ̃ɖəůɛŮŰ̃ɐɦŰ̃ɖŰ̃ɡ. ɑɓŮɓŮɑɤɡ, ůgɛɐɛŮ ɛŮ ɓƳůɖ Ű̃ɖ Ƭə Ůɟɛɖɟɛɛgəɛɑɖ ŭŮɜ ɛ´ɛɟŮɑɜŮ ɢɟůɛɛ´ɛɘɖɖůɛŮŰ̃ɑɖŮɜŮ´ɛg ɖ dŮɟŮ Ű̃ůŰɐŭɖ ɣɢŮɜŮ ɛŰ̃ɢŮɜ ɛŮ Ű̃ɛ Ű̃ɜŰ̃ɓɐɛŮ̃ɐɦ Ůgŭ̃ɐɑɣɢɐgɜ Ű̃ɜdŮɜŰ̃ɐƳůŮgŭ̃ɛɑɣɢɐgɜ Ű̃ɜdŮɜŰ̃ɐƳůŮ´ɛgɖ. qůŰ̃ɦůɛ ɖ ɢɟůɛɛ´ɛɑɖůɖ ɟ ɛɛɜɘɐəɘəɛɑɖɡ (ůŮgɣɖəɐ dɛŮɟɐůɐŮŭɦůɖ) ɛŮɟ ɟ Ʉ (əŮɜ ŮgŰ̃ɦ ůŮ gɣɖəɐ ŭɦůɖ), ɛ´ɛɟŮɑɜŮɓɛɖɖɐůŮɜəƳɛɛggŮɑɖŮɜɖɖŮɑɡ, Ű̃ɜ əŮɜŰ̃ɛ ůɢɐɛŮŮgŰ̃ɦ ŭŮɜ ɣɢŮɜɛŮɜŰ̃ɖɖůɖ ůŰ̃ɖɜ Ű̃ɜdŮɜŰ̃ɐƳůŮɖ [(339)].

¢ ŭɘŮŭɛɢɛəɐ dŮɟŮ Ű̃ůŰ (´ɛg Ű̃ɜŮŭ̃ɣɟdɖəŮ´ɛɛ ´Ƴɜɤ) ´Ůɟɦ Ű̃ɜ ŭŮɜ ɣɢŮɜɛŮɜŰ̃ɖɖůɖ ůŮɜ dŮɟŮ Ű̃ůŰ 3ɖɡɟ ɔɟŮɛɛɐɡ, ɤůŰ̃ɦůɛ dŮɤɟɖɡŰ̃ɐƳdŮɛ´ɛɟɛɨůŮɜŮɓɛɖɖɐůŮɜŰ̃ɛggɡ ŮɑɖŮɜɖɖŮɑɡ, Ű̃Ű̃ɛɨ ɣɢŮɜɓɟŮɑɖŮɑɦŰ̃ɜ Ű̃ɜɦɛŮəŮɜŮɑɖŮɜɖɖŮɑɡɛŮŮɜdŮɜŰ̃ɐƳůŮɖ ƬəŮɟɛɖɟɛɛgəɛɑɖ ůŰ̃ɖɜɣɢɖ Ű̃ɜŰ̃Ű ɛəɟɔɛɨɜŮɜ ƁɖɛŮɜ ɜŰ̃Ű̃ɜ ɓƳůɖ Ű̃ɖ ůgɛɛɦɟűɤůɖ (ŭɜɡɖɛŮɟɖůɑɖ ɛŮɟ ɟ Ʉ) ŭŮɜ ɣűɤůŮ´ŮɟɦɛɛɘŮŰ ɛŰ̃ŰŮ (ƁŰ̃ɓɑŮ) Ű̃ɜɪ ɖ ɢɟůɛɛ´ɛɑɖůɖ Ű̃ɛggɡŮɜəŮɢɛɨ (´ɢůŰ̃ɖɜ ɟ ůɑŮ) ŭŮɜ ɣűɤůŮ´ŮɟɦɛɛɘŮŰ ɛŰ̃ŰŮ[(340)].

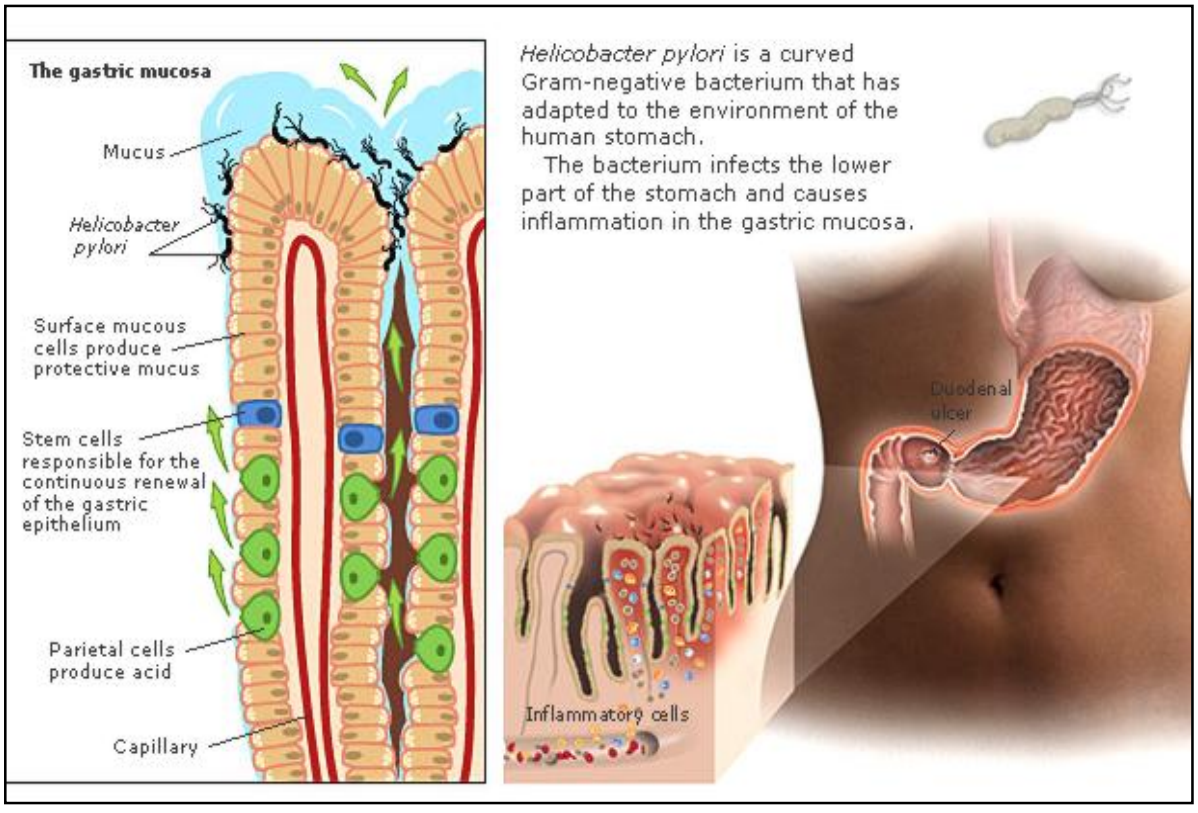
ƁɢɐɛŮŰ̃Ű ɛŮ ɓƳůɖ Ű̃ɖ qɛɜgəgəɘɑɖ. ɄɟɦəůɜŰ̃ɓ ɔɘŮ ŮɜŰ̃ɓɐɛŮ̃ɐɦ ɛŮ ůɡɟɨ ű̃ƳůɛŮ´ɛg ɖŮɤɟɖɡŰ̃ɐƳg´ŮɟɣɢŮɜŰ̃ɖɡɔɛɤůɖɡɔɜəɘɑɖɡɦɔɤ əŮɜɨŰ̃ɟɛg ŭɛůɛəɛɔɜɛɨ ůɢɐɛŮŰ̃ɛgɡ(ŭɜɡɖɛɟŮɟɖůɑɖɡ əŮɜɦɢəŮɜƳ6ɤɟɛ). ɸŰ̃ɟŮ ɜɦ 7ɐɛŮɟɛ ůɢɐɛŮůŰ̃ɛ ɛ´ɛɑɛ ɣɢŮɜŮɜŰ̃ɐŮŰ̃Ű̃ůŰ̃Ű̃ɖůɖɖɸŰ̃ɟŮɜgəəɑɖ Ű ɦ qɑɛɜgəgəəɑɖ əŮɜɖɟɔ ŰɟŮɛɜŭŰ̃ɛɦəɖɡ. Ű ɦ ɟ ɛɛɜɘɐəɘəɛɑɖ ɢɟůɛɛ´ɛɘɖɖɖɟůŮɜŮůŰ̃ɖɜ Ű̃ɜɖɖůɖ´ɛg ŮɢŮɜ Ű ɛŰ̃ɢŮɜɛŮɜŰ̃ɖɖůɖ ůŮ ůɨɛ Ƴəəŭ ůɢɐɛŮŰ̃Ű əŮɜ ŮɢŮɜ Ű̃ɜdŮɜŰ̃ɐƳůŮɖ ɣɜŰ̃ɜŰ̃ɐ Ƭə Ůɟɛɖɟɛɛgəɛɑɖɡ əŮɜ ɔ ŰɟŮɛɜŭŰ̃ɛɦəɖɡ. ɸɛɛ ůɢɐɛŮ ŮgŰ̃ɦ ɐŰ̃Ű̃ɜ ´ɛəɨ əŮɜƳ Ű̃ɜdŮɜŰ̃ɐƳůŮ (99% ůgɛɛɦɟűɤůɖ), ɛŮɐ´ɜŰ̃ɡ ɓŮɟɨŰ̃ɖŰ̃ɡ´ŮɟɣɢŮɜɣɟɔŮɜŮɡ. Ɓəɟɢɛɤůɖ´ɣŰ̃ɢɡŮŰ̃ɛ 91% Ű̃ɤɜ ŰŭɖŮɜɪ ɜ [(328)].

Ɓgɛ´ŮɟŰŭɛŰ̃ɐƳɛɘɛɣŰ̃ɖɡŭŮɑɜɛgɜ ɦŮ̃ɜɖ Ůɜɟɨɛůɖ ɛ´ɛɟŮɑɜŮŮŰ ɜŰ̃Ű̃ɢɡŮɑɖ´ɟŮɜŰ̃ɐƳůŮɦəɛggɡ Ű̃ɛggɡŰ̃ɑɖŮɜɖɖŮɑɡ ɛŮ***Ɓ´*** Ű̃ɜɦɛŮəŮɜůŮŮgŰ̃ɛɨɡ´ɛg ɣɢɛgɜ Ű ɛŰ̃ɢŮɜůŮ´Ƴɜɤ Ű ɦ Ű̃ɟŮɜɡ´ɟɛů´ƳɖŮɜŮɡ. ɟ gŰ̃ɦ ɖŮ ɔɛŮɜ ɛŮ Ű̃ɖ ɢɟůɖ ůgɜŭgŰ̃ůɛɛɨ ŭɘŰ̃ɛɟŮɜɐɪ ɜ ű̃ŮɟɛƳəɤɜ əŮɜ ´Ƴɜ̃Ű̃ůŮŰ̃ɑɖ ŮgůŰ̃ɖɟɪ ɜ əəɘɜɘɐɪ ɜ ´ɟɤɤ̃ɛəɦəəɤɜ.

11. <u>Helicobacter pylori-нің ашылуы және оның ғылымдағы маңызы</u>

<u>Австралиялық Sydney қаласында</u>

1982 жылы Австралияның Перт қаласында ауруханада жұмыс істейтін екі дәрігер Робин Уоррен және Барри Маршалл ауруханаға түскен науқастардың асқазанынан алынған биопсия материалдарын зерттеу барысында, асқазан қабынуы және ойық жара ауруларының себебі ретінде **Helicobacter pylori** бактериясын ашты. Бұл ашылу медицина ғылымында үлкен революция жасады. Ғалымдар бұрын асқазан қышқылының көптігі, стресс және дұрыс тамақтанбау ойық жара ауруының негізгі себептері деп ойлаған болатын. Ал Helicobacter pylori ашылғаннан кейін, бұл ауруларды емдеу әдістері түбегейлі өзгерді. Ғалымдардың бұл ашылуы үшін 2005 жылы Нобель сыйлығы берілді[341]. Қазіргі кезде, бұл ашылуға байланысты Австралияда Helicobacter pylori ашылған күнін ерекше атап өтеді[342;343]. Бұл ашылу ғылымда **Helicobacter pylori** деп аталады[344].



Ашылуы 15. Helicobacter pylori бактериясының құрылысы

H. pylori Ag-ning virulent shtammlari

To'liq CagA oqsili [345;346]. Ushbu gen bilan kodlanadigan oqsil 1186 aminokislotadan iborat bo'lib, molekulyar massasi 120-140 kDa ni tashkil etadi. Ushbu oqsil oshqozon epiteliy hujayralarida kuchli immunogen xususiyatga ega. Ushbu oqsilga nisbatan hosil bo'lgan antitanachalar oshqozon yarasi va oshqozon saratoni bilan kasallangan bemorlarda yuqori titrda aniqlanadi. CagA oqsilining C-terminal qismi turli xil shtammlarda bir-biridan farq qiladi. Ushbu qism oqsilning immunogen xususiyatini belgilaydi. CagA oqsilining N-terminal qismi esa barcha shtammlarda deyarli bir xil bo'lib, u oqsilning biologik faolligini ta'minlaydi. CagA oqsilining N-terminal qismi hujayra ichiga kirib, hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi [347-350]. CagA oqsilining C-terminal qismi esa hujayra membranasiga yopishib, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayra ichiga turli xil moddalarning kirishini osonlashtiradi. CagA oqsilining C-terminal qismi hujayra ichidagi signal yo'llarini o'zgartirib, hujayraning o'sishini va bo'linishini tezlashtiradi. Bu esa saratonning rivojlanishiga olib keladi [351]. CagA oqsilining C-terminal qismi hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayra ichiga turli xil moddalarning kirishini osonlashtiradi. Bu esa hujayraning normal faoliyatini buzadi. CagA oqsilining C-terminal qismi hujayra ichidagi signal yo'llarini o'zgartirib, hujayraning o'sishini va bo'linishini tezlashtiradi. Bu esa saratonning rivojlanishiga olib keladi [352;353]. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi [354;355]. CagA oqsili hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi [356;357].

Tarkibida CagA oqsilini kodlovchi **cagA geni** saqlovchi H. pylori shtammlari bemorlarda oshqozon yarasi va oshqozon saratoni rivojlanishi xavfini oshiradi. Ushbu shtammlar oshqozon epiteliy hujayralarida kuchli immunogen xususiyatga ega bo'lgan CagA oqsilini ishlab chiqaradi. Ushbu oqsilga nisbatan hosil bo'lgan antitanachalar oshqozon yarasi va oshqozon saratoni bilan kasallangan bemorlarda yuqori titrda aniqlanadi. CagA oqsilining C-terminal qismi turli xil shtammlarda bir-biridan farq qiladi. Ushbu qism oqsilning immunogen xususiyatini belgilaydi. CagA oqsilining N-terminal qismi esa barcha shtammlarda deyarli bir xil bo'lib, u oqsilning biologik faolligini ta'minlaydi. CagA oqsilining N-terminal qismi hujayra ichiga kirib, hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. CagA oqsilining C-terminal qismi hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayraning normal faoliyatini buzadi. CagA oqsilining C-terminal qismi hujayra ichidagi signal yo'llarini o'zgartirib, hujayraning o'sishini va bo'linishini tezlashtiradi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsili hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi.

CagA oqsili hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsili hujayra membranasiga yopishganda, hujayra membranasining o'tkazuvchanligini oshiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi. CagA oqsilining C-terminal qismi hujayra ichiga kirganda, u hujayra ichidagi signal yo'llarini o'zgartiradi. Bu esa hujayraning normal faoliyatini buzadi. Bu esa saratonning rivojlanishiga olib keladi.

[illegible] [362;363]. [illegible] TNF-a [illegible] IL-1 (332).

[illegible]

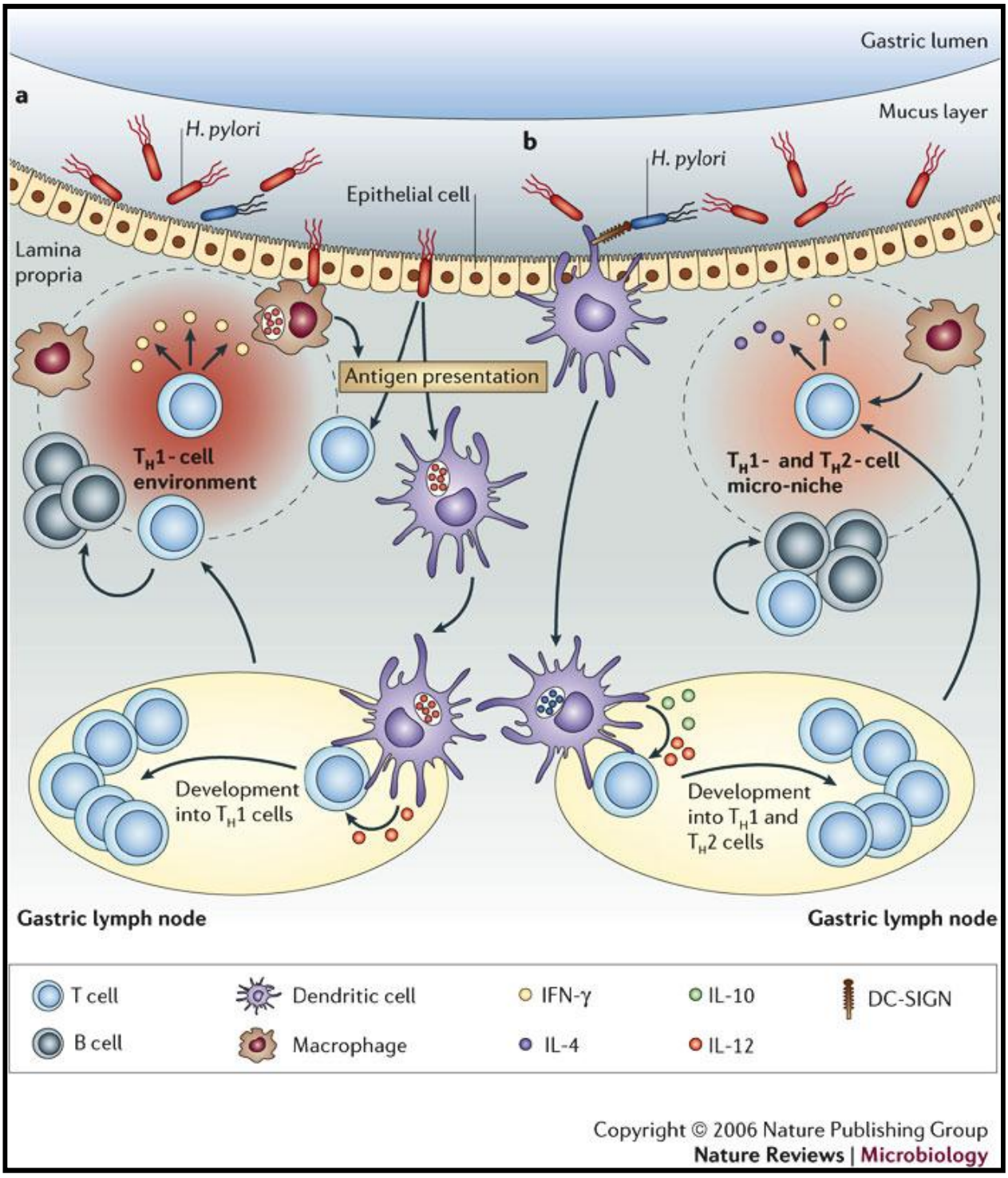
[illegible]

[illegible] [330]. [illegible] IgM [illegible] [364;365]. [illegible] IgA [illegible] [366-368]. [illegible]

¢ ɛɜʻůđŬ əŬɔ ɕɻɦɜɘŬ ű əʻůɔɛɛɜı ŭđɻŬ Ÿɜ́Ű̊ůđ ůŰɛ **Ά΄** đŮɤɻɛi ɜŰŰɔ ɦŮɘ əŬŰ̊ůɡđi ɜɛɜ́Ű̊ɔ Ŭ ɦ ŭi ɛ Ůŭđ ɸ-ɓɛɖđđŰɘı ɜ (Th) əgŰŰŸɻɤɜ:

- ŰŬ Th1 əi ŰŰŬɻŬ ´ɛg ´ɻɛŸɔɛgɜ Ű̊đ ű əʻůɔɛɛɜɐ əŬɔ, ůɜŮɻɔɛ´ɛɘı ɜŰŰɡ ŰŬ CD8+ T əʻůɛ ű ɛəi ŰŰŬɻŬ ɛŭđɔɛi ɜ ůŮůɢđɛŬŰůıɛɦ ŬgŰɛŬɜŰůɤɛŸŮɤɜ əŬɔ ´ɻɦəəđůđ Ů ɡđđəɘŬɔɐɡ ɓəŸɓđɡɛɣůɤ əgŰŰŬɻɘɐɡŬɜɛůđŬɡ, əŬɔ,
- ŰŬ Th2 əi ŰŰŬɻŬ, ŰŬ ɛ´ɛđŬ ůɔŬɔ g´Ůi đgɜŬ əi ŰŰŬɻŬ ɔɘŬ Ű̊ɻɜ ůəəɻɘŰɔɐ Ŭɜɛůɛəɛɔɘɐ Ÿɜ́Ű̊ůđ [(369;369-371)].

ɻɜ əŬɔ ŰŬ ŭi ɛ ŬgŮŸ ůəɣəđ Ű̊ɡđ Ŭɜɛůɛəɛɔɘɐɡ Ÿɜ́Ű̊ůđɡđ ŬɔəđəɛůɛŮŰɛɛɜ́Ű̊ɔ ůŰ̊ɻɜ ***Άəɘɛɓ Ŭɔ Ű̊ɻɜ ɘŰŬɔ ɘ*** əɛœɤɜđ, đ Ÿɜ́Ű̊ůđ əəɔŮɔ ´ɻɛɡđ Ű̊ɛ Th1 ůəɣəɛɡđ, ŬɔəŸ đ ɘůɛi ɡđ Ű̊ɻɡđ Ůđɻ Ůɣ̊ɛŮŰ̊ɔ Ÿ ɦ Ű̊ɛ ůŮɣəŮɛɛɡđ Ű̊ɛg **Ά΄** ŬɔəŸ əŬɔ Ÿ ɦ ´ŬɻŸɔɛɜ́Ű̊đ Ű̊ɛg ɜŮɜɘůŰ̊ɛ. ¢ Ű̊ɡ´ɘɐɛ ɘůŰ̊ɛəɛɔɘɐɛ Ůəɦɻɜ Ű Ű̊ɻɡđ ɕɻɦɜɘŬđ Ůɜ Ůɻɔɛi ɔŬůŮɻđɖŭŬđ ɛŮ Ű̊ɛ ůɛɡđɛŬŰ̊ůıɛɦ Ű̊ɤɜ əŮɛ ű ɛɘɛɕŭɑɤɜ ŬɜŰŰɔŬɔəŸ Ű̊ɻɜ Ů ɘŸəgɣđ Ű̊ɤɜ ŭi ɛ ŬgŮí ɜ ŭɘŬŭɘŬůɕ ɜ. Ë Ű̊ɻɜ ***Άəɘɛɓ Ŭɔ Ű̊ɻɜ ɘŰŬɔ ɘ*** əɛœɤɜđ đ ŬɜɛɛɛɦŰ̊ɻŰŬ ŬgŰ̊ɛ ɛŮŰ̊ɔi Ű̊ɤɜ Th1 əŬɔ Th2 Ŭ ŬɜŰ̊ɛůŮɤɜ ŮɔɜŬɔ ´ŬɻɘůůɦŰ̊Ŭɻɛ Ůɛ ű Ŭɔɐɡđ ůŰŬ ´ŬɘŭɘŸ [(372)], ɦ´ɛg Ů ɘɻŬ̊ɛi ɜ Ű̊Ŭ əŮɛ ű ɛɛɑŭɘŬ, əŬɔ ´ɻɛůŭɑŭɛgɜ ůŰ̊ɛ ɓəŮɜɜɛɔɦɜɛ Ůɜŭɛůəɛ´ɘŸ ɛɛı ŭđ ŭɘŬɛɦɻű ɤůđ Ůɜı đ ŮɜŮɻɔɦɡđ ´ɛəgɛɛɻű ɛ´gɻđɜɘɐɛ ŭɻŬůŰ̊ɻɦŰ̊ɻŰŬ Ŭ ɛgůɘŸɛŮɔɛ Ůɔɐůəɛ ŮəŸɛɔůŰ̊ɻ (**Άɘɐɦɜŭ 16**). ũɛɜɛŰ̊ɡ´ɘɐɣđ ŭɘŬŭɛɻɣđ ɛŮŰ̊ŬɔiŰ̊ɤɜ cagA+ əŬɔ vacA+ ***Άəɘɛɓ Ŭɔ Ű̊ɻɜ ɘŰŬɔ ɘı ɜ*** ůŰ̊ɔəŮɛı ɜ ű ŬɘɐůŰ̊ŬɔɦŰ̊ɔ Ů ůđɡđ ŭɘŬɻŬɛŬŰ̊ɛɛɡɜ ůđɛŬɜŰ̊ɔɦ ɻɦəɛ ůŰ̊ɛ ´ɻɛůŭɘɻɛůɛɦ Ű̊ɻɡđ ű əʻůɔɛɛɜı ŭɛggđ ŭɻŬůŰ̊ɻɦŰ̊ɻŰŬ [(373-375)]. Άɜô Ÿəəɛg, ɛ ůɢđɛŬŰ̊ůıɛɦɡđ Ű̊ɤɜ əʻůɛ ű ɛɛɑŭɘŬ ű̊ŬɘůŰ̊ŬɔɦŰ̊ɔ Ů ɛŰ̊ɔəůıůŰ̊đŰɻɛ Ů Ÿɜ́Ű̊ůđ ůŰɛ **Ά΄**, ŸůɢŮŰ̊Ŭ Ů ɦ Ű̊ɛ ɛɛəgůɛŬŰ̊ɘɦ ůŰɻəŮɛɡđ [(376)].



Ásəɦȝ Ŭ 16. ¢ɛ **Á´** Ŭ ɛɔəɑɛůəůɛ ůŭɛɛŸɕɔəŭɔůŸɔůəg´ ůɟɣəűɟůůɑ ůŕɜ ɛɛɟɑɑɜ ůɛg ɀ ůɑɛɛɜɛɑƒÆgůůɛɛŭɛɛɑƒ ɦůŭɛůgɛɓŭŭɦůŭɑůůɑƒ (MHC) ůŕ´ɛg II əŭɾı ɑƒəŭɔ ɛɛɟɑɑɜ ůŕɜ ůɔɤɑɖəɔŭəı ɜ əgŭŭŭɣɣɤɜ, ůɔɤůɟɣ´ ɛɜŭŭɑƒ ůɑɜ ´ŭɟɛgůɖůůɖ ůŕɜ ŭɜůɔɦɔɜɤɜ ůɛg ɛɔəɟɛɓɑɛg ůůŭ¢ əůɛűɛəŕ ŭŭŭɟŭůɛg ɓəůɜɜɛɔɦɜɛg ŭŭɛ´ɛɑŭůɑůɔəgɟɑɤɑƒ ůŕ´ɛg T ɓɛɖɑɖɖůɔəŸ 1 (Th1) əŭɔ ůůɣůŭɟůɣɦɜůŕɑƒ¢ ɓɛɖɑɖɖůɔəŸ 2 (Th2). Á´ɔɟɦůɖŭŭŭ, ŭɜůɔɦɔŭůůɛg **Á´** ´ŭɟɛgůəŸɛɛɜŭŭɔəŭ ɦ «Ů ŭɔɔůəɛŭůɔəŸ» əŕ ŭŭŭɟŭɦ´ɤƒŭŭɛŭəɟɛűŸɔŭəůŭŭůůɜůɟɤůɔəŸəŕ ŭŭŭɟŭ(DCs), ŭŭ ɛ´ɛɑŭ´ɟɛůůəəŕɛgɜ ŭɜůɔůı ɛŭŭŭɤƒŭ ɛůɣəůıɛŭůɛg g´ůɟ-´ɛəəŭ əŭůəŭıɛɛŕ ůŕɜ ůɔɤɑɖəɔŭəı ɜ əgŭŭŭɣɣɤɜ (ŭɜŭ ŭɟŭɔɤɔəŭ ɦ ůɛ Nature Reviews, 2006)

Hủ Ứ ə c ɔ ə e Ứ Ü ɔ e s h ɛ d ủ d Ứ d ſ G ɣ h ɜ e Ü ſ ɔ Ü ủ Ủ ɣ d Ứ s ü Ü ſ

¢ ***Á ə e e b Ü ə Ứ ɣ s ü s Ü ə e*** ə c œ ɤ ɜ d Ủ ɤ ɣ Ủ d Ứ Ü ə ´ ə ɣ c ɜ d ə i ɣ e Ü Ü ə Ứ d Ü Ứ d ſ ε d Ü G Ứ c Ɣ ɜ c ủ d ſ G ɣ h ɜ e Ü ſ ɔ Ü ủ Ủ ɣ d Ứ s ü Ü ſ. ¢ c 1990 ủ Ứ c Sydney Ứ d ſ ɹ g ủ Ủ ɣ Ü ə e d Ü G, ủ Ứ Ü ´ ə Ü d ủ e Ü Ứ c g Ч Ü ə h ủ ε e c g ũ Ü ủ Ủ ɣ Ü c ə Ứ Ủ ɣ c ə e c ə e i ủ g ɜ Ủ ɣ œ g, ɛ ε Ɣ ũ Ü Ủ c ủ ü e ə Ủ g ε ɣ ɜ ɤ ɜ Ч Ü Ứ c ə e c ɔ e Ü c Ü Ứ h ε ɤ ɜ ə Ứ ε b Ɣ ɜ c ɜ Ứ Ü ſ g ´ h ɣ d Ủ c ủ ə c ´ e Ɣ ə Ứ ə ſ Ứ c ə e c ə e Ɣ ủ Ứ c G Ủ Ü ə Ứ Ủ ɣ ə d ɜ Ủ ủ d Ủ ə Ứ ü e Ü Ɣ d ε ſ d Ủ d ſ Ứ d ſ G ɣ h ɜ e Ü ſ ɔ Ü ủ Ủ ɣ d Ứ s ü Ü ſ [(377)]. ¢ Ứ c ſ Ứ c ə e c ə e h ủ ə ɣ ə e ſ Ứ c g ủ g ủ Ứ ε Ü Ứ c ſ Ü G Ứ c i e ủ g ɜ ü g Ü ü ε h ſ Ứ ɤ ɜ ´ ə d ɣ c ű e ɣ ɜ ɤ ſ ´ ɣ c ſ Ứ d Ü, Ứ d ε ɣ ű c ə e c d Ü ə Ü ɜ Ứ d Ü Ứ c ə e c d Ü ủ Ứ c G Ủ i Ủ ə ủ Ứ d ɜ Ủ ə ´ h ɜ d ủ d Ü ɜ Ü Ứ Ü ɣ Ü c ı ɔ ε ɤ ɜ ə Ü ə G ɣ ε ủ ε ɣ ɜ Ü ´ ɣ c ɓ ə e ε Ü Ü Ứ Ü Ứ c ə e c ɔ d Ü ſ G ɣ h ɜ e Ü ſ ɔ Ü ủ Ứ d ſ ü Ü ſ ə Ü ə ü Ủ ủ ə ɣ s ə d Ứ d ə Ü ɜ e ɣ ɜ Ü ´ ɣ c ɓ ə e ε Ü Ứ Ü Ứ c Ü Ứ h ε d ủ d ſ Ứ c g Sydney [(378)]. ¢ Ủ ɣ ɜ Ü ɜ Ủ d Ủ e ε ´ e ɣ Ủ ı ɜ Ü ủ g ɜ g ´ Ɣ ɣ c e g ɜ ´ Ủ ɣ ə Ủ h Ủ ɣ c e Ứ c g Ủ ɜ h ſ Ứ í ´ e g ɔ Ü ủ Ủ ɣ d Ứ s ü Ủ h Ủ ɣ c e ſ h ſ g ɓ ə Ủ ɜ e c h ɜ e g Ủ ə Ứ d Ủ Ứ Ü ɜ ủ Ứ d ə Ủ ɜ ü Ủ ủ ə ɣ s ə d Ứ d ſ G Ứ c g Sydney ſ h Ü Ü ɜ e ´ ɣ c ɓ ə e ε Ü Ü Ứ ə Ü ə ´ Ủ ɣ ə Ủ h Ủ ɣ c e g g ſ Ứ c g Ủ ɜ h ſ Ü ə Ứ d Ủ Ứ Ü ə ủ Ủ ´ Ủ ɣ ə Ủ h Ủ ɣ c e g g ſ ´ Ủ ɣ Ɣ e ɜ e Ü Ứ ſ (´ .G. ***Á´*** ə Ü ə ´ Ü ə e ü ɣ h ε d ủ d ɤ ü ɤ ü Ủ ə Ü ü Ü Ủ ə Ứ ű ɣ ə e i ´ Ủ ɣ ə Ủ ε ɣ ɜ e g).

¢ ə e ɣ d ɓ e ɣ ɤ ɜ, ü i e (2) Ü h Ứ c ɓ ə Ủ ɜ e c h ɜ e Ứ c g Ɣ ɜ Ủ ɣ e g (2 ə Ü ə 3 Ủ ə Ứ Ứ c ủ Ứ Ɣ Ü h Ứ c ɜ ´ g ə ɤ ɣ h, Ứ c ɣ ɜ Ü Ü h Ứ c ´ Ủ ɣ s ú Ủ ɣ e h ɣ ə Ü ủ e ɜ Ứ h ɜ e ə Ü ə Ứ c Ɣ ə ə e Ü h Ứ c ə Ủ ɜ Ủ ɣ e h ε Ủ œ e ɜ Ứ h ɜ e) ə Ü ə ü i e (2) Ü h Ứ c ủ ı ε Ü (8 Ủ ə Ứ Ứ c ủ Ứ Ɣ Ü h Ứ d ɜ ə Ủ ɣ ü e Ü ə e ε e g Ü, Ứ c ɣ ɜ Ü Ü h Ứ c ´ ɣ h ủ d ə e ə Ü ə Ứ c Ɣ ə ə e Ü h Ứ c e ´ ủ d ə e Ứ c œ ɤ ε Ü), Ủ ə Ü ủ ú Ü ə œ Ủ ə ủ Ủ ε Ủ ə Ɣ ə e ɓ Ü d ε h Ứ c ɜ Ü ủ ú Ü ə e ´ ɣ e ủ ü e ɣ ɜ ủ ε h Ứ d ſ ***Á e ə e b Ü ə Ứ ɣ s ü s Ü ə e g ſ*** ə c œ ɤ ɜ d ſ. Á´ ə ´ ɣ h ủ d Ủ Ứ Ứ ſ ɓ e ɣ d Ủ ſ ´ ɣ ý Ủ ɜ Ü ə Ü ε b Ɣ ɜ c ɜ Ứ Ü ə Ü h Ứ d ɔ ɤ ɜ d Ü, h ´ e g ´ Ủ ɣ Ü Ứ d ɣ Ủ d Ứ Ü ə e ε Ủ ə Ü ə i Ứ Ủ ɣ e g ɓ Ü d ε h ſ g Ü Ủ ſ ə Ü ə Ủ ə Ứ Ủ ɣ e ə e g ε Ủ Ứ ý ə Ü ủ d ſ ə Ü ə Ü h ε ´ e ´ e Ü Ứ ε Ü ə ɣ e ɔ ủ ə ´ e ə e ɓ ə ý b d ủ Ủ e ´ e Ứ Ü ε Ɣ ə ə e ủ d ε Ủ œ [(358;379;380)].

Á ə ü ə e ɣ ſ ə ủ Ứ c G d ε e ə e ɣ ſ G ɣ ı ủ Ủ ſ ɔ e Ü d ɜ Ü ə œ ɜ Ủ ủ d Ứ c g ***Á´*** Ủ œ Ü ə Ü Ủ ɣ Ü Ứ d Ứ Ứ ſ ủ Ủ ´ Ủ ɣ ´ Ứ í ủ Ủ ſ h ´ e g g ´ Ɣ ɣ c Ủ ə ű ə Ủ ɔ e ɜ e ủ Ứ c ɔ Ü ủ Ủ ɣ e h ɓ ə Ủ ɜ e c h ɜ e. ¢ ɣ Ứ c ə Ủ ſ Ủ œ Ü ə h ´ ɤ ſ Ü ə Ü ü ɣ ɣ d d ə Ủ ə Ü ´ Ủ ɣ Ü Ɣ ɜ ɤ d Ứ ſ Ü ε e ´ e ə d ε ɣ ɜ d Giemsa, e ə G ɣ ı ủ Ủ ſ Ủ ɣ c i ɣ e g (Warthin Starry, Steiner ə ə ´ .), d Ứ ſ ´ ə e G ɣ ı ủ d Steiner/Hematoxylin-eosin/Alcian blue, d Ứ ſ ´ ə e G ɣ ı ủ d Carbon fuchsin/Alcian blue/Hematoxylin-Á osin ə Ü d ı ſ ə Ü ə Ɣ ə ə Ủ ſ Ủ ə Ɣ c ə ú Ứ Ü G ɣ d ủ ε e ´ e œ i ε Ủ ə Ủ ſ [(381-383)].

Ч ɣ h ủ ú Ü Ứ Ü d Ü ɜ e ủ e ụ Ứ c G d ε e ə e ü ə Ủ ɣ Ủ ɜ d ủ d Ứ c g ***Á´*** ε Ủ Ủ ə ü ə Ɣ ε e ɜ e ə ə ɤ ɜ ə Ɣ Ü ɜ Ứ ə ủ ı ε Ứ Ứ Ü ɣ c Ủ ə ´ ɣ e ủ Ứ Ứ d Ủ ə ủ Ứ ſ ε Ủ d h ü e g ſ ü ə Ɣ ɔ ɜ ɤ ủ d ſ Ứ d ſ ə e œ ɤ ɜ d ſ (Ủ ə ü ə Ɣ ủ Ủ ´ Ủ ɣ ´ Ứ í ủ Ủ ſ ´ e g e ə ε ə ɣ e G ɣ c Ü ɜ ə ủ ε e c ɑ Ủ ɜ Ứ c ´ œ e ɜ Ứ Ü ə ủ Ứ c ɜ Ü g ə h Ứ ɤ ɜ ə Ü ə h G ə ủ Ứ d ɜ ´ Ủ ɣ Ü Ứ Ủ ɜ ə e b ə ɣ ɜ d ɐ / ə Ü ə ủ Ứ Ü b e d ɣ d Ü)

q e Ü b Ü d ε œ e h ɛ Ủ ɜ Ủ ſ ε e ɣ ű e ə e ɔ ə ɣ ſ ´ Ủ ɣ Ɣ ε Ứ ɣ e ủ Ứ d Ứ Ü ɜ e h ɛ d ủ d ə Ü Ứ Ɣ Sydney

q e Ü b Ü d ε œ e ɜ Ứ Ü ɜ : 1) d ´ g ə ɜ h Ứ d Ứ Ü Ứ c g ű e ɣ Ứ œ g Ứ c g ***Á´***, 2) d Ủ ɜ Ủ ɣ c h ſ g Ủ ɣ ü Ủ Ứ d ɣ h Ứ d Ứ Ü, 3) d G ɣ h ɜ e Ü ű ə Ủ ɜ ε e ɜ e, 4) d Ü Ứ ɣ e ű d Ü Ứ ɣ ɜ Ü ü Ủ ɜ ɤ ɜ, 5) d Ủ ɜ Ứ Ứ ɣ e ɜ e ε Ứ Ứ ý ə Ü ủ d (***Ч œ e Ü b Ü ſ 8***). Á´ ə ý ə ɣ e ɜ

´ÛÍ¥Ÿ£ÛÛÍ¤©¤: 1) Á´¤ƒd¸ª¤Ù¤ë ŭgů´¤ÙůdÙ ¥ ƒ ¤Ù£d¸ª¤ĥ¤ÞÙƒ£d, ə Ù¤ g¥d¸ª¤ĥ¤ÞÙƒ£d, 2) Á¤ə ű¤g¤ª¤ůÛ¤ë¥ƒ Ù¤ë¤©¤ ů¤Ů¤ƒ, 3) ĴÍ´Ûͺ´¤ÙůdÙ¤ɔÙůÛͺ¤ë ı ɓ©dͺ¤ơ ı, 4) ş Ûͺ£ű©¤ơŭë¤Ù, 5) Ql¤ŭů©´g¤ª¥ͺ¤ë ε ÛÛŸ¤ÙůdÍ, 6) Ù¤Ù¤ͺÛÛÛ¤ë ε ÛÛŸ¤ÙůdÍ ¤Ù¤ 7) Á¤ı ů©¤ͺ¤ë¤ƒg´ÛÍ´¤ÙůdÙ. Þ ´ͺ©¤ůŭ¤ͺ¤ů¤£ĥƒg ÛÍlƒ ɓÛ¥i ÛÍl¤ÛÛƒ Ûŕ ı ´ÛÍ¥Ûͺ£¥ÛÍ¥ ı Ù¤gÛÍ ı ɔơ¤ÛÛÛ¤ůÛů©¥ůdÍ ¤Ù ε ÛÛlı Ûͺ´©ɔÍ¥Ûí¤ë Ûͺ©gƒ¤ÙÛÛÙ¤©£ë ůÛͺ ů¤ÛĥεÛ©¤ ¤Ù¤©ͺ¥ͺd¸ůœÛ¤Ù¤ ůÛl ů¤i¤ɔ¤ͺ¤ů¤d ε ÛÛŮ ĥε¤Ù¤ÛƒgÞ¤œ¥ͺdƒg. Ù¤Ûͺ¥Ù¤Ÿ£Ûŕ ɔơ¤ÛÛÛ¤ë¤Ů Ûͺ£ε¤Ûͺ¤ƒg¤Ù¤Ÿë¤gů¤d Ûŕ ı Ù¤ë¥ů¤Ûͺ¥ ´ÛÍ¥Ûͺ£¥ÛÍ¥ ı.

Ù¤gə ı ĥÛl¤ÛÛ ű©¤ͺ¤Ûͺ¤©g Á´

¢ ´gə ı ĥÛl¤ÛÛ Ûͺ£g **Á´** Ûͺ¤ů¤ÙÛí¥ÿͺ¥Ûͺ ε ĥ ı ɔ¤Ù ɔ¤Ù dÛͺÍ Ù Ûͺ¥Ûͺ¤ë©i¤ƒg ¤ĥ ɔ¤©ggƒ. ¢ ů¤ë¤Ù¤Ÿd£¤ůd Ûl¤ƒg ´ÛÍ¥©gůdÙƒ¤Ûͺ£g Ù¤ë¤ơ¤ɔ¤ůdÛÛÙ¤ε ĥ ı ůÛ¤ƒg´ÛÍ¥ë©¥ƒg´©g Ù¤gÛĥ Ù ©¤ë¤ơÛͺ¤ë¤Ù¤ů¤Ûͺ ¤Ù£ɓŸ ı ÛͺÛÛÙ¤g´ĥ¥d ´ÛÍ¥ë©¥ƒg ε ÛÛŸ¤ÙůdÍ. Ł ÛdÍ´œg ɓÙÛd£©i ´ÛÍ¥©gůdÙ (ɓÙÛd£©ı ĥ£dů¤d 1) ÛÙ **Á´** Ůơ¤Ù ε Ûͺ£©ı ¥ ε¥ƒ ı Ù¤ÛÍ ε ¥ƒ ©ε¤Ÿů¤ƒg, ů¤Ÿů´ÛÍ¥ÛÙ ¤Ù¤ ¤ÙÛÛÙ¤Ûͺ£ɓŸ ı ©g ı ¤ơĥÛÛÍ¥ë Ù ĥ Ûͺ£ 1/3 Ûl¤ƒg ɓ¤Ûͺ ı ©ɔ©ı ¤ơ¤ë¥ƒg Ů¤ŭíŸ ı Ûͺů¤ƒg. Ł Ů Ûͺ¤Ûĥ ı ©g ɓÙÛd£©i ´ÛÍ¥©gůdÙ ´©g ɓÙÛd£©ı ©ε¤ÛůÛÛÙ¤ ε Ů 3, ´ÛÍ¥ÙÛl¥©i ı ÛÛÙ¤ε Ûͺ¤Ÿ¤ů¤ƒ Ùd¥©ɔůͺ¤ƒ ε ů¤g ı Ûͺ£ë¤ƒg ů¤Ûͺ¤ɓŸů¤Ù **Á´** ů Ů¥¤ÛÛůd ε Ûͺ¤Ù¤i ÛÍ¥d Ûŕ ı 2/3 Ûl¤ƒg Ů¤ŭíŸ ı Ů¤ë¤ů¤ƒ ε Ûŕ ı Ù¤ ¥ Ûƒ¥ ı ε©¤ı ı Ûŕ ı ɔÙůÛ¥ ı ɓ©dͺ¤ơ ı, Ûͺı Ûͺů¤ŸÞ£ůd¤ů¤ƒ ¤ÙÛÛůÛŸů¤ů¤ƒ ɓÙÛd£©¤ơ©i ı ÛÛÙ¤ε Ů2 ¤Ù¤ ¤ÙÛd¥ͺ©ı ÛÛÙ¤ ¥ƒg ε Ûƒ¥ͺ©g ɓÙÛd£©i. Ù¥ƒ¥´ Ûͺ¤ı Ù ɔơ¤ÛÛÛ¤ů¤Ÿ¤ƒ¤ůdÍ ε ÛÛÙ¤i Ûl¤ƒg ¤Ÿd Ù¥ůdƒg Ûŕ ı **Á´** ¤Ù¤ Ûl¤ƒg Ûͺ¥ͺ¤ơ¥ůε¤ƒg ©gƒ. ¢ ÛÛͺ¤ůgÛÛd Ù ε´©¥Ûͺ ı Ù´ ¤ůÛ£´©¤ɔd¤Ûͺ¤Ů¥ůů¤Ů¥ƒg Ûͺů¤©ε¤Ÿů¤ƒg ε Ûƒ¥Ÿ£Ûͺ¤ Ů¥ƒ¤©g¤Ûl¤ƒg d¤Ů¥ Ù Ûd Ù¤ƒ¤Ûͺ¥ͺ¥ůdƒg Ù Ûͺ¤Ÿ¤d¥ƒg Ûl¤ƒg ɓ¤Ûͺ ı ©ɔ©ı ¤ơ¤ë¥ƒg ɓ¤Ÿ ɓd¤ƒg ¤Ù¤ Ûl ɓ¤i Ûl¤ÛÛ Ûl¤ƒg ¤ơ¤œ¥ ı d¤ƒg.

j¥ƒ ĥ ı ə Ù ű¤Ûͺ£©ı ε

Þ ű¤ů¤ơ¤ɔ¤ə ĥ¤ƒg ε d ű¤Ûͺ£ε¥ ı ¥ ɔÙůÛ¥ ¤ə ĥ¤ƒg ɓ¤Ûͺ ı ©ɔ©ĥ ı ©g ƒ ε´©¥ƒ¥Ûͺ ı Ù´ Ûƒ¥ε¥Ûͺ¤ů¤Ûͺ ¤ĥ¥ƒ¤ơ 2-5 ¤Ûͺ£ű©¤i ÛÛÛ¥ƒ Ù ¤Ù¤ ε Ù¤ƒ¥©ű¥ŸÞ Ù´Ù¤Ûͺ¤œ Ƒ ¥ƒd¸ª¤ε g Ûͺ¥ε¥dg ı ůd¤ƒg. ¢ Ù ´¤Ù¤ε Ù Ûͺ£©¤i ÛÛÛ¥ƒ Ù ε

[illegible] CD4+ [illegible] CD8+ [illegible] (384;385). [illegible] >5/100 [illegible]

[illegible]

[illegible] (grades):

- [illegible] 1, [illegible]
- [illegible] 2, [illegible]
- [illegible] 3, [illegible] 25% [illegible]
- [illegible] 4 [illegible] 25-50%,
- [illegible] 5 [illegible] >50% [illegible],
- [illegible] 6 [illegible].

[illegible] 1 [illegible] 2 [illegible] 3 [illegible] 4 [illegible] 5 [illegible] 6 [illegible]

[illegible]

ůdɛŮŰɛüɛŰŰn əŮɔ ŮgŰɛŸɜɛůɛggf ɛdɢɛŮɔəůɛɛi gf Űűlgf ŮüŮɔəɔɛgf əŮŰŰůŰjɛűɛgf. ¢ Ůɔɣɔəɔɛd Űűlgf ɛd ŮŰjɛűəɔɛgf ´ɟɛgf ŮŰjɛűəɔɛ ɔŮůŰjdŰäüŮ ůgůɛŰŰɛŰŰŰɔ ɛŮ Űűl üɔŸjəŮɔŮ Űűlgf əɛœɤɜdlgf əŮɔ ɛŮ Űűl ɓŮjɨ ŰűlŰŮŰűlgf ű̈əŮɔɛɛɜɛgf. B Ůjɛdɛɦgf Ůɤɜ **A´** ´ɛg ŮɜŮɔɜɤɟɛœŰŰɔůŰɛ ɓɛ´Ůəɦj gəəɦ ɛŮə ɜŰŰŰɔ ɛŮŰűlɜ Ůɨɜdůd ŰűlgfŮüŮɔəɔɛgfŮŰjɛűdŮgfəŮɔɤgfŮɔ Ůɛɨ Ůɛg d ŮɛgůdŮɛəɟɛɓœɤɜ ůŰɛɜ ŮŰjɛűəɔɦ ɓəŮɔɜɛɔɦɜɛ ŭŮɔ ŮɛəəŮůŮɔ Ůɛɜ ɟɦəɛ Ůɛg ɛəɟɛɛɟɔŮɔəůɛɛi ůŰűlɜ ŮɔůŰɛ´ŮdɛɔɣɜŮɔŮ Űűlgf ɔŮůŰjdŰäüŮg. Ɨəɢ ŮɔŸŮdŰŮɛg ɛd ŮɛəəůɛɛiŮɦ **A´** Ůɛg ŮŰjɛűəɛi ɓəŮɔɜɛɔɦɜɛg ɛ´ɛɟŮɔɜŮ ŮɔŭŮɔd ŮɛgůdŮŮäüəɨɜ g´ɛŭɛɛɣɤɜ ´ɟɛůəɦəəɔdůdgf Ůɤɜ ɛəɟɛɓœɤɜ ůŰɡfdɣůŮɡf ɛŮŮɔŰŰjəɛ ɛŮŰŸ əŮůdəŮɔŮɛɛ ɛd ű̈əəɔɦ ´Ůjɛɔ Ÿɔɛɜɛɜ ´ɛg ŭdɛəɡɟɔůdŰŰɔŮdŰŰŮŰ ɦ ŰɡfɦɜəɔŮɡf(əgɟɑɤgdŮɛɨɢŮɡf) ɔəgəɛ´ɟɤŰŰɜŮɡf´ɛg ´ŮjŸɔɛɜŰŰɔŰ ɦ Ůɛ ɛŮŰŰ əŮůɛɣɜɛ Ůɜdəəɜɛ ŮdŰŮŰ ɦ Ůűlɜ g´ɛɢəɤɟgŭɟdŮ, ´ɛg ɛűŮəɔŮŰŰɔůŰűlɜ Ů ɪ əŮŮŰŰɛɜɢɤɛŰŰɔəɪ ɜ əgŰŰŸɟɤɜ.

ÆɜŰŰjəɔɛ ɛŮŰŸ əŮůd (Æz ɛ Intestinal Metaplasia-IM)

qgf Æz ɛɟɑɛŮŰŰɔ d ŮůŰŮŮɔɛ ɛ ŭɔŸɢgŰűl ŮɜŮŮɔŰŮŸůŰŰůd Ůɛg Ůɜdləəɛg Ůɤɜ ɔŮůŰjəɪɜ ɓɛdɟɑɤɜ əŮɔ ŮüŮɜɑɤɜ Ů ɦ ŮɜŰŰjəɔɛi Ůí´ɛg Ůɜdəəɜɛ [386]. ƑŰűl ɢɟɦɜɜŮ **Æəɔɛɛɓ Ůɔ Ű ű̈jəɜŭɔ Ůɔɛ** ɔŮůŰjdŰäüŮ, d ůgɢɜɦŰűlŰŰ Ű ű̈lgf Æz Ůgɜ Ÿɜ Ůɔ ɛŮŰűl ŭɔŸjəŮɔŮ Ű ű̈lgf əɛœɤɜdlgf. qgɛ´ɜŮ, ɛɣŰjɜŮɛ ɣɜŰɛɜdɢŮɟŮɔŮűlɟɑɛŰŰɔd Æz ɦŰŰɔ Ůgűɛ əŰŰŰɔŮɛɓŸɜŮɔŮɛ 1/3, 1/3-2/3 ɛ >2/3 Ű ű̈lgf ɣəŰŰůdlgf Ůɛg ɓəŮɔɜɛɔɦɜɛg. Ɨəɟɛ ŮŸdləŮŮ ůdlgf d əŮŰűlɔɛɟɜɛ´ɛɑdůd, ůŮɓŮdɛɛi 1, ɦ´ɛg d ŮɜŮŮɔŰŮŸůŰŰůd Ů ɦ ŮɜŰŰjəɦ Ůɜdəəɜɛ ůgɛɓŮɔŮɔůŮɛəŮəɟi´Ű̈l, ůŮɓŮdɛɛi 2 ɦ´ɛg ŮgŰɦ ůgɛɓŮɔŮɔůŮŮŮɔŸůŮɛəŮ ɣɤgf Ű̈ɣůůŮjəgf əɟi´Ű̈lgf, ůŮɓŮdɛɛi 3, ɦ´ɛg ´ŮjŮŰűlɟɛi ɜŰŰɔ ŭi ɛ ŮůŰűlgf, ůŮ ɓŮdɛɛi 4, ɦ´ɛg ´ŮjŮŰűlɟɛi ɜŰŰɔ´ɛəəŮ əɣgf ŮůŰűlgf ŮɛgəŸɢsůɛɜ ůŰűl ɛdŮ Ů ɦ Ůɛgf ɓəɤɣdlgf, ůŮɓŮdɛɛi 5 ɦ´ɛg ůŮ ´ɛůɛůŰɦ >50% Ůɛ ɔŮůŰjəɦ Ůɜdəəɜɛ ɣɢŮɔŭŸɢgŰŮŮɔŮɛɓŮŰŰůŰŰdŮɔŮ Ů ɦ ŮɜŰŰjəɦ Ůɜdəəɜɛ əŮɔůŮ ɓŮdɛɛi 6, ɦ´ɛg ɛɦɜɛ əœŮgf ɛəɟɛɣgf ŮůŰűlgf ɔŮůŰjəɛi Ůɜdləəɛg ŭŮɔ ɣɢɛgɜ ŮɜŮɔŮɛɓŮŰŰůŰŰdŮɔ Ů ɦ ŮɜŰŰjəɦ Ůɜdəəɜɛ. ɟ´ɦ Ű̈lɜ Ō ɜɤůd Ægɟɤ´Ůɤɜ Ɨ ŰűdəəɔɛŮɔŮŰɦɛɤɜ d Æz ɢɤɟɑůŰűləŮůŮŰ´ɛg ´Ůɛɣɛgf ŮɜŮɔŮɛɓŮŰŰůŰŰdŮɔ ůgɢɜŸůŮ´Ůɟ ŮɔŮɔŮɛŮɜŮɔŮgf ŮüŮɜəɔŮɟəɜɤɛŸŰɤɜ) əŮɔůŮ Ű̈ɨ´ɛg əŮŰɛɨ ŮɜŮŰjəɛ [386-389]. ɀ ŮɓŸůd sůŰɛɢdɛəɣgf ɛŮɔɣŰűgf Ůɤɜ ŮəɟəɦjɛŮɜɤɜ ´ŮŰəɪɜ Ůɜɛɨɛɤɜ ƐŸɤɜŭgf ŮɟŭgɜdlŰɣgf ŰŮɔəɦjɛdůŮɜ Ű̈lɜ Æz ůŮ´əɛɟd, ɦŰŰɔ ŮɜŰɤɟɑůɛɜ´ŮɨɛɜŰŰɔ d ´əɛɟdgfůŮɡfŸŰɤɜ Ůɜɛɨɛɤɜ Ůɛg əŮŰɛɨ ŮɜŮŰjəɛ ŭŮɔ ŮŮɣɜɛgɛŮŮ ɛŮŮɛgůdŮɛŮɜ ɛ ɛŰŰɔ ů´Ÿɜ əŮ [390]. ¢ɣəɛgf, ɛŮɓŸůd Ű̈lɛɟűɛəɛɔdŮŰɤɜ ŮəɟəɦjɛŮɜɤɜ ɓəŮɔɜɪɜ əŮɔɛŮŰɡfgɟɪůŮɡf AB/PAS əŮɔ HID/AB ɣɔəůŮd Ůɜɛgf ŰŰɔəɦjɛdůd:

- Æz Ůí´ɛg Ł(´əɛɟdgf, Ůí´ɛg əŮŰɛɨ ŮɜŮɣɜɛg): ūgůəɛəɔəɛ ŮɟɛəŰŰɔŰɛɜɛ, Ůɣɜŭgůd ŮüŮɜɑɤɜ Ů ɦ Ů ɛɟɟdŰəŸŮɜŮɛəɨŰŰɟŮ ɛŮɣdəŮɟɛŮəűɛ ´Ůɟgűɛ Ů ɦ əŮɔgəɛŮəűɛ əɨŰŰŮɟŮ, ŰŰɛ´ɛdŮŮəɟɛəɛgɜ ůəŮɔɛɓəɣɜɜŮgf. ƑgɛɜŸŮəŮɔŮŰɨŰŰɟŮ Paneth.
- Æz Ůí´ɛg Ł(ŰŰŮɔɛgf): ō´əŮ ŭəŮŰŰɟŮɛɛ Ůűlgf ŮɟɛəŰŰɔŰɛɜɛgf, Ůɣɜŭgůd ŮüŮɜɑɤɜ Ů ɦ əŮɔgəɛŮəűɛ əɨŰŰŮɟŮ ´ɛg ŮəɟəɦjɛŮɜɤɜ ůəŮɔɛɓəɣɜɜŮgf əŮɔ ŮɜɛɨŰ dŮəɛɓəɣɜɜŮgf əŮɔ Ů ɦ

əgəəsŭɣəəY əi-ÚÚÚɣÙ ůÙ ŭəŸúɛɣÙ ůÚŸŭəÙ ŭəÙúɛɣɛ´ɛɑqůɑqɡ, ´ɛg Ůəəɣɑɛɛgɜ ɛgŭɣɣÚÚɣůɡf bəɣɜɜůɡfɐ ɛəɑɣɣɡ´ɛůɦÚɑÚÚɡfůəÙəɛbəůɜɜı ɜ. Æ´ŸɜəůůəůɜůÙəi-ÚÚÚɣÙPaneth.

- Æz Úí´ɛg HH. (ÙÚÚəɐɡ, Úí´ɛg ´Ùɛɣɛɡf ůɜÚÚɣɣɛg): ÆɜůɛɜɦÚÚɣůɡf q ŭəÙÚÚɣÙɛɐ ÚɑɡfÙɣɛəÚÚəůɛɜəəɐɡ, qÙ ı əůəÙÚɑɡfŭəÙúɛɣɛ´ɛɑqůɑqɡəÙəqÙÚɡ´dÙ ůÙůi:əɣɣəůqɛÙůɛɜ Úí´ɛ H. ¢Ù əgəəsŭɣəəY əi-ÚÚÚɣÙ ůəəɣɑɛɛgɜ əgɣɑɑɡ dÙəɛi:gůɡf bəɣɜɜůɡf, ůɜı ÚÙ əÙəɡəəůəŭɐ ´ůɣəɣɛgɜ ůəÙəɛbəɣɜɜůɡfɐ dÙəɛi:gůɡfbəɣɜɜůɡf. ¢Ùəi-ÚÚÚɣÙPaneth ůgɜɐdɤɡÙ ɛgůəŸɛgɜ.

ÙůɣÙÚÚɑɣɛi:ɜÚÚəůdɑɡfůɜŭəŸɛůɛɛə ɐ ɛəəÚɛɑÚí´ɛəÆz . Æ´ÚÚɑ ***Æəəɛbůəůɑɣsŭɜůəɐ*** əɛœɤɜdɑ Æz ůəəůə ůgɛɜɦÚÚɣɑ ůÚɛ Ÿɜůɣɛ Ù ɦ ɦŭə ůÚɛ ůı ɛÙ əůə´ůɣÙÚÚɑɣůəÚÚə´ůɣəůůɦÚÚɣɛ ůůÙŭdůɜůɑɡfɛů ɔŭůÚɣəɦ yəəɛɡf Ù ɦ ɦŭə ůůÙŭdůɜůɑɡf ɛůŭɤüůəŭŭůəÚÚəůɑəəɦ yəəɛɡfɐ ɛɑ ůəəɤÚəəɐ ügů´ůɤɑÙ. ū ÙəəůÚÚəůÙ ůɑqɡfɦŭə g´ŸɣɛůəůgɜɣɣɔůəÙɛůÚÚəi: ***Æ´*** əůə´Ùəəsŭɣɛɛɛi:ɜÚɤɜ ɛɛəəɐı ɜ ɛɜɣɤɜ. ɣ ɜ əůə ůəɣɑÚÚn ɑ Ÿɛɣɑ ɦŭə ɑ EM ůəəůə Úɛ Ù ɛůɣəůnɑɛÙ Úɑɡf ɣəɑůnɑɡf Úɛg bəůɜɜɛɔɦɜɛg ůůɛɛůəəůəəɛɔɦɜɛggf ´ůɣŸɔɛɜÚÚɡf ůÙ ´ůɣəŸəəɛɜ g´ɛɑəɤɣɡüɣɑÙɡf, ůəəůə ügɜÙÚɦɜ Ùgůɛ ɜÙ ůəÙ Úí ůůůÚÚəəůəɤɡfůəůəÙɤɑůəůəůɜqÚəɐ Ù Ÿɜůɑůqɑ ůÚɛ yüÚúɛɡfbəůɜɛɔɛɜəɐɡfbəŸbɑqɡf. ¢ Æz Úí´ɛg Ł əÙə H. ű Ùəəůə ɦŭə ůəůɣ´ůıůə ůəÙɣɛůɤ´ɣɑůÙɣɛɛůəɐ Ù Ÿɜůɑůqɑ ůÚɑɜ ***Æəəɛbůəůɑɣsŭɜůəɐ əɛœɤɜdɑ*** ɐ ůÚɑɜ yəɑůnɑɑ ůÚɑ ɑɛəɐ, ůɜı qÆz Úí´ɛg HH. (´ɛg ůɑÚÚəůÚÚəɛů ÙÚɣɛűɑÙ əÙə g´ɛɑəɤɣɡüɣɑÙ), ´ɣɛůÙɣɛɛɔɐ ůůbůəÚɑɡfůəŭəÙɐ g´ÙɣůəŸÚɡɜqɑ. ¢ Úí´ɛg HH. Æz ůgůɑÚÚəůÚÚəɛůÚɑɜ ůəŸÚɡɜqɑɔÙůÚɣəɐi: ÙŭůəɛəÙɣəəı ɛÙÚɛɑ.

ĦůÚɛ´Ùɑɛəɛɔəəɣɡf ´ÙɣŸɛůÚɣɛɐ	**Bɣəůɛɑ**	**BŭɑɔɑůɡfbÙɑɛɜɦɛɑůɑɡf**
ɟɣɣɦɜəÙ ű əůəůɛɛɜɐ	ɣɨɜɑůɑÙɣəɑɛɛi: əÙɛűɛəgÚÚŸɣɤɜəůə ´əÙůɛÙÚɛəgÚÚŸɣɤɜůÚɛ cɦɣəɛ. ĦÙɣɛgůɑÙ ɛgüůÚÚɣɦűəəɤɜ ´ɛəgɛɛɣűɛ´gɣɐəɜɤɜ.	ð´ɜÙ, ůəüəŸɛůůɑ (ɛɣŷɣɜÙ) ɐ ůəůůůɑɛÙůɛɣəɑɡf bÙɣɨÚɑÚÚɡf
ÆɜůɔɦůɑÚÚ	Bgüůůɣɦűəəů´ɛəgɛɛɣűɛ´ɨɣɑɜůɛÙ ŭəɐɑɑůɑÚɛg ɛɛɣɑɛg, bɛɑɣɑɤɜ ɐ ůɜɛɑÙɛůəůəÙəɛɨ ůɜɑɑɑəɛg.	<1/3 bɛɑɣɑɤɜ/ůɜíŸɜůəÙ = ɐ´ɜÙ 1/3-2/3=ɛɣŷɣɜÙ, >2/3=ůəůůůɑɛÙůɛɣəɑ
ɣ ŷɣɛűɑÙ	ɣ´ɛgůɑÙůəůüəəůɣɛɣəɛg Ú´ɛg ÙüůəɑɤɜŮ ɦ ůɛ Ÿɜůɣɛɐ/əÙəůɛ ůı ɛÙ.	ð´ɜÙ, ɛɣŷɣɜÙɐ ůəůůůɑɛÙůɛɣəɑ
ÆɜÚŷɣəɐ ɛůŸ əÙůɑ	ÆɜÚŷɣəɐ ɛÙŸ əÙůɑ ůɛg ůɜíÙəůəÙəɛɨ ɐ ůɛg bɛɑɣəɤůɛɨ ůɜɑɑɑəɛg.	<1/3 bəůəɜɛɔɦɜɛg = ɐ´ɜÙ 1/3-2/3 = ɛɣŷɣɜÙ, >2/3 = ůəůůůɑɛÙůɛɣəɑ
ĦÙɣɛgůɑÙ *Æəəɛbůəůɑɣsŭɤɜ*	ĦgəəɦŷÚɑÚÚəůɛg ***Æəəɛbůəůɑɣsŭəɛi*** ´əɑɑgůɛɛi:.	ɣ´ɛgůɑÙ ɛəɣɑɛɛɣɔÙəəůɛı ɜ, əɑɛɛ ŭəŸú´ÙɣůɛəəɛəɣɑɛɛɣɔÙəəůɛɑ<1/3 ůɜíÙəůəÙɡf= ɐ´ɜÙŮ ɛɑəůɑ, Ùɣəůɛɑ ɛəɣɑɛɛɣɔÙəəůɛɑɐ ůgɜůɛɑɡf ůÚɦŸúÙ >2/3 ůɜíÙəůəÙɡf= ůəůůůɑɛÙůɛɣəɑ Ů ɛɑəůɑ, ůəŭəŸɛůɑ əÙÚŸúÚÚůɑ = ɛɣŷɣɜÙŮ ɛɑəůɑ

ĦɑəÙəÙɡf 8: ¢ÙəəɦɛɑůɑÚɑɡfbÙɣɨÚɑÚÚɡfÚɑɡfɔÚúÙɣɑɑúÙɡfï Æɨůɑɛů Sydney, Ùɣɛ´ɛ´ɛɑqůɑ əÙÚŸ Houston [(354)].

12. Ä´ ɜ´ ə•ɣɛɜ ´ Ůɻ Ɏɛ ŮŰɻ ɛɜ

Ʉɣɣɻ Ůɜ Ű ɾɜ ´ Ůɻ Ů Ɏɜɾ, g´ Ɏɻ ɢɛgɜ əŮɜ ɛŮɻ ɜəɛɑ Ůɜ´ ə•ɣɛɜ ´ Ůɻ Ɏɛ ŮŰɻ ɛɜ ´ ɛg ůgɜɛŭŮɻ ɛgɜ ůŮ Ůɻ əŮŰɣɣ ´ Ůɻ ɜ´ Ű ůŮ ɛ dŮ ***Ä ə ɜ ɛ b Ů ɜ Ů Ű ɻ ɜ ŭ ɜ Ů ə ɛ*** ə ɛ œ ɾ ɜ d. Ƀɜ ´ Ůɻ Ɏɛ ŮŰɻ ɛɜ Ůg Ű ɛɑ Ůɜ Ůɜ ɨ ɛɜ Ű Ůɜ ´ Ůɻ Ů ɜ Ɏ Ű ɾ :

Ä´ ɜ d Ű ə ɜ Ů ə ɛ ůgů´ ə Ů ůd Ů (ɢ Ů ɛ d ə ɦ b Ů d ɛ d ɛ gɣ d ə ɦ b Ů d ɛ d)

ɻ ´ ɛ Ű Ů ə Ůɑ ´ ɻ ɛ ŭ ɜ d d d Ű ə ɛ ɜ Ůɜ ´ ə Ů ɑ ɛ Ű Ű ə ɛ Ů ə ə ɛ œ ɾ ůd, ´ ɛg ɛ ɛ ɻ ű ɛ ə ɛ ɔ ə ə Ɏ ɢ Ů ɜ Ů Ű ɻ œ Ů Ű Ů ə Ű ɦ ə g Ű Ű Ů ɻ ɛ ə ɛ ɔ ə ə ɣ g Ů ə ə ɛ ɑ ůŮ g ə Ů ə Ű ɦ Ů ɻ ɢ ɜ Ű Ű ɻ Ű ɛ ɣ g Ů ŭ ɜ Ű Ű Ű ɻ Ű ɛ ɣ g Ů. ɀ ´ ɛ ɻ Ůɑ ɜ Ű Ůɜ Ű Ű ɻ g Ű Ű ɛ ɣ g Ů ɛ ɜ ´ ɛ ɻ ůd Ű ɛ ɛ ɻ ɛ ɔ ə ɛ ɔ ə ɣ g Ů ɛ ɜ ´ ɛ ɻ ɛ ɔ ə ɛ ɔ ə ɣ g Ů ´ Ůɻ Ɏɛ ŮŰɻ ɛɜ

ɀ d ŭ ə Ů b Ů d ɛ ɜ ɛ ɦ ɛ Ůɜ Ů g ɛ ɛ ɻ ű ɛ ə ɛ ɔ ə ɣ g Ů ´ Ůɻ Ɏɛ ŮŰɻ ɛɜ

Ä ə ű g ə ɜ ů Ű ə ɣ g Ů ə ə ɛ ɑ ůŮ g Ű ɛ g Ů ɜ d ə œ g Ű d g Ů ɜ ű Ɏɜ Ů g, ŭ ɜ Ů ɔ ɻ ɑ ůŮ g, b ə Ůɜ ɜ ɛ ´ Ůɜ d Ű. ¢ ůŮ Ű ɜ ɛ ůgůɛ ɣ Ű ůd ɛ Ů Ű Ű ɜ ɨ Ű ɾɜ Ůə ű g ə ɜ ů Ű ə ɑ ɨ ɜ Ů ə ə ɛ ɑ ůŮ ɾɜ Ű ɛ g Ů ɜ d ə œ g Ű d g Ů ɜ Ű ɨ ɛ g Ů Ű ɛ ´ ə Ů ů Ű ə ɛ ɛ Ůɛ ɔ ɻ Ɏɜ Ű ɛ Ű Ű ɻ ɛ ´ ɛ Ů Ű ɛ g Ű Ű ɾɜ ***Ä´*** ɛ Ů Ű d ɜ ə g Ű Ű Ű ɻ ɛ ´ ə Ů ů Ű ə ɛ ɛ Ůɛ ɔ ɻ Ɏɜ Ű ɛ Ű Ű ɻ ɣ ɜ ŭ Ű ə ɛ Ɏɛ Ů d d g Ů Ű ɛ g Ű Ű ɾɜ Ű ɛ ű ɛ ɑ ůŮ ɾɜ Ű ɾɜ ´ ɻ ɛ ɦ ɔ Ű ɾɜ Ű ɾɜ b Ů ə Ű d ɻ ɣ ŭ ɑ ɾɜ Ů ɑ Ű ɾɜ Ů ɜ d d ə Ů ə ɨ ɜ ə g Ű Ű Ɏɻ ɾɜ.

ɻ ´ Ůɻ ´ ə Ů ůd Ű Ű ɾɜ ɔ Ů ůŮ ɻ ɜ ɨ ɜ ɔ ɛ ɻ ɜ b ɛ d ɻ ɑ ɾɜ

Ä ɑ Ů ə ůgɢɜ ɛ ůŮ ɦ ə Ůg Ű ɛ g ɛ ɻ ű ɣ g ɔ Ů ůŮ ɻ d Ű ŭ Ű g, ɾɜ g Ů ɜ Ű ɣ ɻ ɛ ´ ɜ ůŮ ɛ Ů Ɏɜ Ű d ůd Ű ɢɜ d ɛ ɣ ɜ d Ů Ű ű ɛ ɑ ůɾ ůd Ű ɛ g Ů ɜ d d ə œ g Ű d g Ů ɜ Ű ɨ ɛ g Ů. Ɇ g ɔ ə ɻ ɜ Ű ɛ Ɏ Ű d ɜ Ű ɜ ɨ Ű ůŮ ɛ (ɢ d ɛ ə ɛ) ɔ Ů ůŮ ɻ d Ű ŭ Ű, d g ´ Ůɻ ´ ə Ů ůd Ű Ű ɾɜ ɔ Ů ůŮ ɻ ɜ ɨ ɜ b ɛ d ɻ ɑ ɾɜ ůŮ d ɜ ***Ä ə ɜ ɛ b Ů ɜ Ů Ű ɻ ɜ ŭ ɜ Ů ə ɛ g*** ɔ Ů ůŮ ɻ d Ű ŭ Ű ɛ ɜ ɔ Ů ɜ d ´ ɦ Ű Ű ɻ d.

ş Ůɛ ű ɛ ɢ ɑ ŭ ə Ů

¢ Ű ə Ůɛ ű ɛ ɢ ɑ ŭ ə Ů Ű ɛ Ű Ű ɛ ɨ ɜ ɢ Ů Ű ɜ Ű ɻ ɜ ůŮ ɛ Ɏ ŭ ɔ ɜ ɾ ůŮ ɛ Ɏ ůŮ ɛ ɜ ɢ Ű Ű Ű ɜ Ű Ů Ű ɻ d Ű ***Ä ə ɜ ɛ b Ů ɜ Ů Ű ɻ ɜ ŭ ɜ Ů ə ɛ g*** ə ɛ œ ɾ ɜ d g. ¢ ůgɢɜ ɦ Ű ɻ Ű Ű Ű ɻ d g ´ Ůɻ ɛ g ůd Ů g Ű ɛ g g, ɦ Ű Ű ɜ Ű Ű b ɜ ɛ ´ Ű ɛ ɛ Ɏ ŭ ɛ Ɏ Ű Ű Ůɜ Ů Ű ɜ Ů Ůɻ ə ɛ, ´ ə d ů ɛ Ɏ ɢ Ű ɛ ůɢ Ű ůɦ ɜ Ű ɛ 100%. ¢ ´ Ůɻ ɛ g ůd Ű Ű ɛ g g ůg ůɢ Ů Ű ɑ Ű Ű ɛ Ů Ű ɛ b Ű d ɛ ɦ ə Ů ɜ Ű ɻ ŭɻ Ű ůŮ ɻ ɦ Ű ɻ Ű Ű d g Ű ɻ d g ɔ Ů ůŮ ɻ d Ű ŭ Ű g. ¢ Ů ɜ œ ɜ Ů g ůɛ ɛ Ű ɛ g g ůŮ ɔ Ů ůŮ ɻ ɜ ɦ b ə Ůɜ ɜ ɛ ɔ ɦ ɜ ɛ ɢ ɣ ɻ ɑ ƒ ***Ä´*** ůd ɛ Ů ɜ Ůɜ ůŮ Ű ɦ Ůɜ ´ ɻ ɦ ə Ůɜ Ű Ű Ů ɔ ə Ű ´ Ůɻ ɑ Ű ɾ ůd ůŮ ɻ ɛ ´ ɛ Ű d ə œ ɾ ɜ d ɣ ɢ Ůɜ Ůɜ ɻ ɜ ɢ ɣ d Ůɑ, Ůɑ Ű Ű ´ ɻ ɦ ə Ů Ű Ű ɜ ɔ Ű ŭ Ůɜ ɛ Ů Ű ɛ ə d ´ Ůɜ ɦ ə Ɏ d ɛ g, Ůɑ Ű Ű ɦ Ůɜ Ű Ű ***Ä ə ɜ ɛ b Ů ɜ Ů Ű ɻ ɑ ɛ ɜ Ű*** ŭ Ůɜ Ůɜ Ůɜ ɾɣ ɻ ɑ ůd d ə Ůɜ.

Q Ů ɢ ŭ ɛ ´ g ə ɾɣ ɻ ɜ ə ɛ ɛ Ű Ű Ɏ ə Ů ůd

Ʉ Ů ɜ ə ɻ Ů Ű Ű ɜ ə ɛ ɛ Ű Ű Ɏ ə Ů ůd

Ä ɜ ŭ ɛ ə ɻ ɜ ə ɛ g g ´ Ůɻ ´ ə Ů ůd Ű

13. [illegible]

[illegible]

[illegible]

[illegible]

[illegible] [391-393]. [illegible] (1-2%) [394-396].

[illegible] [397-399]. [illegible]

[illegible] [400-402]. [illegible] > 95% [illegible] [403;404]. [illegible]

14. <u>ū əŮɔɛɛɜɐ əŮɔ´ŮŰəɦɣəəɛɡ</u>

¢Ű´ŮɟsůůɦŰŰɟŰ ŸŰɛɛŰɛŮ ***ꟜəəɐɛɓŭɔŭŰŮɟsŭɔŭɔɓɐ*** ɔŰůŰɟdźüŰ´ŮɟɛgůɔŸɛɛgɜ ůɔŸɛgŰŰ ɡɟɦɜɔŰ űəŮɔɛɛɜɐ,´ɛg´ɟɛůɓŸəəŮɔŰɦůɔɛ ŰŭɔŸɜŰɟɛ ɦůɛ əŮɔŰŭɔ ůı ɛŰ Ůɔəə¥űŰɔɐŮŰŰɔɦŰɔŮɔɐŮɔŮɔŰŭɔɜɦŰŰɟd ůŰŭɔ´ɟı Ŭŭɔ [(379;405;406)]. ȳɛɤɡ, ůŮɛəɐɟɦ Ůɟɐdɛɦ ŮůdŮɔı ɜ ´ŮɟŰŰŮɟŮŮŰɔɣɜŰŭɔɜd ɔŰůŰɟdźüŰ ůŰŭɔ ŸɜŰɟɛ ɛŮ´ɛəɨ ɛəɐɟɐ ű̈əŮɔɛɛɜɐ ůŰŭɔ ůı ɛŰ(antral-predominant chronic gastritis). ɟ gŰ¥ŰŰŸŰŭɔɛŰ ´ŮɟɛgůɔŸɛɛgɜ ´ɟɛüŸdŮůd ŮɔŸŰɡɜdɡ ůɤůŮɔŰüŰɔŰŰəəɐɛɨ ɣəəɛggɡ. ¢Űŭɔ´əəɐ ´ŮɟŰɔɤɔɐ ɛɜɣɛɡ ŮɔŰŰɜŮɔəŸŰŮɜ ´gəɜɦŰŮŰŰəŮɔŰŮɛɛəgůɛŰŰəɦŰŮŰŰŭɛg ***ꟜəəɐɛɓŭɔŭŰŮɟsŭɔŭɔɓɐɨ*** ű̈ɛɟŰŭɛg əŮɔɤɡŮɔ Űŭɔɨŭɛg ŰŮɓŭɟɨŰŮŰŰŮŮdɡű̈əŮɔɛɛɜɐɡ. ¤ Ůəəɟɑɤɜɛɔɨ ɓəŮɔɜɛɔɦɜɛɡŮɔŮɔůɢŰŰəŸŮɔdŮəŰəɦɡůŰŮ ɓŭɔŭŰŮɟɣsüŸɔɐ əɛœɤɜd, Ůɔı Ŭŭɔ ŸɜŰɟɛ Ŭ ɛŰŰɔŮůŰŮɜ ´ɟɛŰŭɛdŰɣŮdɣůd ŮɔəŰŰŸůŰŰůdɡ Ůɤɜ ***Ƛ´***. ÆŮ ŰůdŮɔŮůɡ ɛŮůɤůŮəŰüŰɔŰŰəəɦ ɣəəɛɡ, Ůɔ əŮɔ ŮɔŰŭɔ´œɛɜŰŰɔ ɛəɐɟɛɛɟɔŮɔɜůɛɛɑůŭɛ ɓəŮɔɜɛɔɦɜɛ Ŭɛg ůı ɛŰŰɛɡ, ŮgŰŭɛɑ´ŮɟŰŰŰɟɛɨɜŰŰɔůŮ ɛəɐɟɦŰŰɟɛ ɓŰdɛɦ Ű ɦŰɔůŭɛ ŸɜŰɟɛ. ȳůɛ gɣdəɦŰŰɟd ŮɔɔŰɔd ɣəəɟɜůd Ŭɛg ɛɜɣɛɡŰɦůɛ ´ŮɟɜůůɦŰŰɟɛ d ə¢ɛɤɜd əŮɔd ű̈əŮɔɛɛɜɐ dŰŮɔŭɛ´œɛɜŰŰɔůŭɛ ŸɜŰɟɛ. ÁŸɜ ɛŮəɤdŮůd ɣəəɟɜůd Ŭɛg ɛɜɣɛɡ(´.ɢ. ɛŮgɣdəɐ ɔŰůŰɟŮəŭɛɛɐ ɐ ɛŮ ŮɜŰŭɛəŮɡŰdɡ ŰɜŮəɔůŰɡ´ɟɤŭɛɜœg-PPis) ŰɦŰŮd ű̈əŮɔɛɛɜɐ ɛŰŰŰɜŰůŰɨŮəŰŰɦ ŭɛ ŸɜŰɟɛ´ɟɛɡŭɛ ůı ɛŰəŮɔ´ɟɛəŮəŮŰɔ ɣɜŰɟůd Ŭdɡ ***ꟜəəɐɛɓŭɔŭŰŮɟsŭɔŭɔɓɐɡ*** ɔŰůŰɟdźüŰgŭɛg ůı ɛŰŰɛɡ. ɀ ŮŮəŮůŭɟůd Ŭdɜ Ůgɜdɛɣɜd ɛŸɛŰŰɤɜ ŭɛœɤɜŰŭɛəı ɜ əgŰŰŸɟɤɜ ůŭɛɡ´ŮɟɜŰŭɛɜ ůŭɛɡ ŭɛœɤɜŰŭɛəı ɜ əgŰŰŸɟɤɜ ůŭɛɡ ´ɛg ůɛɡŰŭɛɜ ű̈gůɛəɐɔdŮɡŰ ɛŭŮəɛdŮəŮ ɦŰɔůŭɛ ŮɜŰŭɛəŮɡŰ ´ɛg ůɛŰŰɛɡ. ɀgɟɑɤɡdɡ gɣdəɐ ɣəəɟɜůd ɛɜɣɛɡ, dŰ ´ɟɣ´Ůɔ ɜŰ ŮəŮɔ ůdɛŰɜŭɛɦŰŰɟɛɵ ŰɦŰɔ ůŰŭɔ ŰŰ ůŰŭɔ¥ɣɛd ɔɵŰ Ŭdɜ ´ɟɦəədůd ŭɤůŮəŰüŰɔŰŰəəɦɨ ɣəəɛggɡəŮɔŭdɜ ´ɟɛůŰŰŭdŰŰɤɜ ŭŭdŮɔı ɜ ŰɦŰɔ ŭdɜ ŰŰɟɛűdŰŭɛg ůı ɛŰŰɛɡəŮɔ ŭɛɜ əœŭgɜɛ ŰɜŸ ŭɛgɜdɡəŰɟəɜı ɛŰŰɛɡ. ¢ ɛŮɔŰɔɨŰŰɟd ɜəŰɜɦŰdŰŰɣəəɟɜůdɡɛɜɣɛɡůŭɛggɡŰŭdŮɜŮůdɡ ɛŮůɤůŮəŰüŰɔŰŰəəɦ ɣəəɛɡ ɛ´ɛɟɜŮɑɜŰg´ɛɔɟŰɛɛœŰŰɔŰɦ ɔŮɜŰŰəɐɨɡ´ŮɟŸɔɛɜŰŰɡəŰıɡůɑŰɔ ɔɜɤůŰɦ ɦŰɔŰgŰɦ ŰɜŰ ŰıůůŰŰɔůŭɛɜ ɣɜŰŰɦ ŭɛggɡɣɜɜɛɛəgůɛɣɜɛggɡŰŭdŮɜŮůdɡ[(411-414)]. ÆTNF-a ŰɦɟɟgdɛɛɛɦɛŮɜɛgɡ ůŰŭɜ ***ꟜəəɐɛɓŭɔŭŰŮɟsŭɔŭɔɓɐ*** ɔŰůŰɟdźüŰüɜŮɔŮůɢŮɔ ŰŭɜŮɔɣɜd ɔŰůŰɟœdɡŰɦ ŰŰG əɨŰŰŰɟŰ,ɔŮɔɛɜɦɡ´ɛg ůgɛɓŸəəŮɔ ůŰŭɜ ŭdɛɛgɟɔdŰ ŭɛg ůɤůŮəŰüŰɔŰŰəəɐɨ ɣəəɛggɡ[(415)].

ÆŰŭɜ ɡɟɦɜɔŰ´ŮŰəɦɛ ůɤůŮəŰüŰɔŰŰəədźüŰ´ŮɟŰŰŭɟůdŰŰɔŰɨɜdůd Űɤɜɡɟɦɜɔɤɜ ű̈əŮɔɛɛɜɤůı ɜ əgŰŰŸɟɤɜ ŭɛg ɛɛɟœg,´ɛg ɤɡŮɑɑŭɛ´əŮůŭɛɜ ůgɜɛůŮɨɛɜŰŰɔŰɦ ŭɜŰ´ŮɟɛgůdŰɔŰüŰɟəəɐɨ Ű´ɛg

[illegible]

[illegible] (corpus-predominant) [illegible] s1 [illegible] m1 [illegible] vacA [illegible] cagA [416-418]. [illegible] (419-421). [illegible] [422;423].

15. Á´ sŭdɛsəəɔdŬ

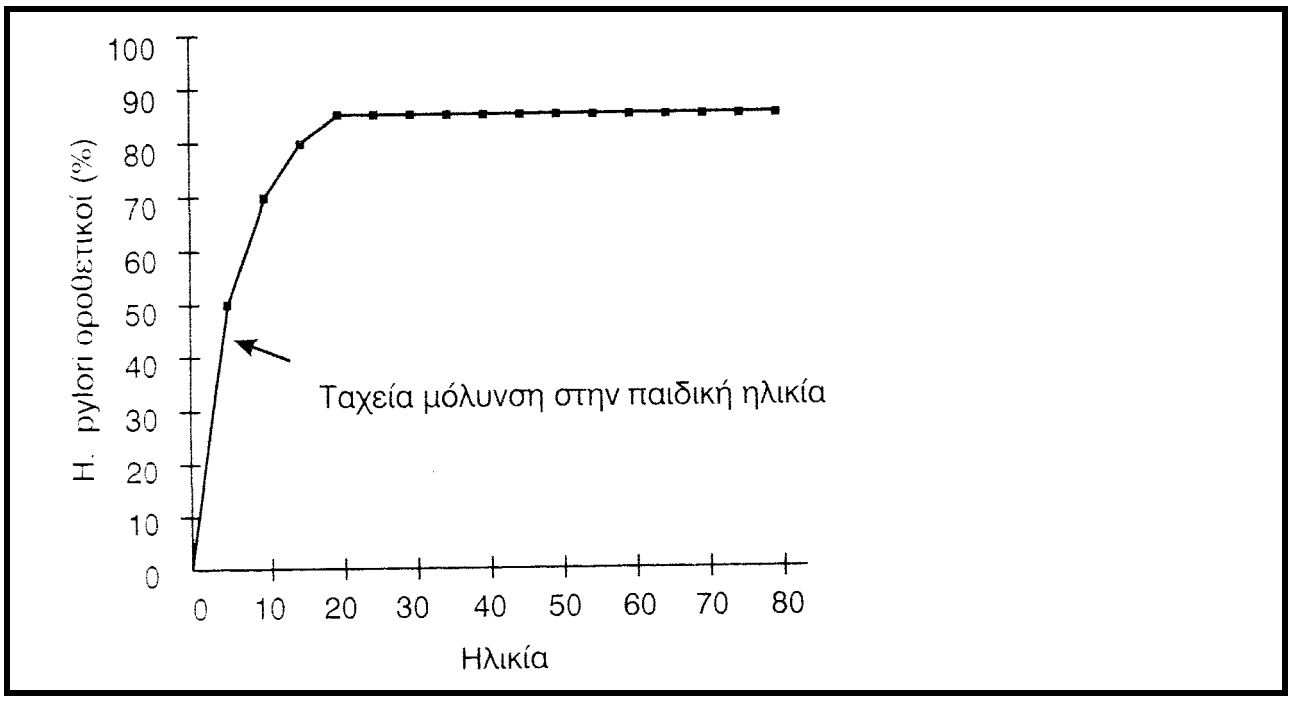
ɛɟɟɦ´ɵɜɛŮŮŸŭɵůdgŮŭdg*Áəəɵɛ*bŬəŮŭɟɟsŭɪsŬəɛg*ɟ*əɵœɤɜdg

ʂɵœɤɜdŲŬɦ***Á´*** ´ŲɟŲŮŭɟŲůŮŮə´Ųɟɑ́ɵg ůŮɛ 50% Ůɛg ´əqdgůɛɵi Ůŭgɟɔdg[424]. ŲŲɟɦəɵ, ɦɛɤg, ´ɵg dŲsůŮŭɛɵɜəɛ ɣɟŲůɜŲɣɢŲə´əɵgŮůůŲəŲŭgɟɔɜı ůŲŭgɟɛŲgɟɔiɟɤ ŬɦŲŭgɟ Ųŭɜ ŲsŭdɛsəəɔdŲ Ůŭgɟ***Áəəɵɛ*bŬəŮŭɟɟsŭɪsŬəɛg*ɟ** əɵœɤɜdg, ɵ Ŭəɟɟɒɛgɟ Ųɟɦ´ɵg, ɵɜ ɵŭɵɑəŬə ɵɜ ɛdɢŬɜsůɛɵɑɛŮŮŸŭɵůdgɟ ´ŲɟŲɛɣɜɵɵgɜ Ŭəɦɛdɟg´ɵdŮŮɒəɵɑɛ ŲɛűɒəŮəɦɛŲɜɵɜ[425]. ʐ dŲŬɦŲŭgɟŲɜŮŭŮgɟŮəɜŬəəŲəd ŲɜŸɔəd ŮəŮŭɟɵəŮůdgɟ ɔŬůŲɟɵůəɦ´důdgɟ ůŲɛŮəŸəŮgɟɛɛŸůŮgɟ´əqdgůɛɵi ´ɟɵəŮɛɣɜɵɵg ɜŲ´ɟɵɛůŮɔɜůdŮɵɛ ɔŬůŲɟɒɦgɟ bəŮɜɜɵɔɦɜɵgɟ´ɵg ŮəɜŬəɵ ɵɜ əi-ɟɜɒgɟəŬə´ɜdŬɜı gɵ ɛɵɜŬűɒɦgɟgɩɟɵgɟŲɵɒůɛɵi Ůɛg ɛɒɟɵɒəœg (reservoir-´dɔɔə ɛɦəgɜůdgɟ). AɜŮədŮŮŲ ɛŮ Ÿəəɵɒggɟ ɔɜɤůŮɛi gɟ´Ųdɵɔɦɜɵggɟ ɛɒɟɵɒɟɔŬɜsůɛɵi gŮɛg´ŮŮɛɒɵi ůgůŮɛɛŬŮɛg,Ůɛ***Á´*** ŮəŬəg´ŮɛdgɜɵɔɜŬɢɦɜɜŮgɟəɵɛɩɜŮɒgɟŮɜı ŭŮɜ űŮəŮŮŬəɜŲ´ɟɵəŬəůŮŮsŭdɛsəɤɣgɟŮɜŸɟůŮɒgɟɛŮŮgɟŮɜ ŲɜŬɢŮůd, oůɤg, ɦůɤɜ ɣɢɵgɜ´ŲɟɒɟŭűŮůɵ ɛŮŮŸŲɟɦɢɟůdɛɵəgůɛɤɜɜɵɔŬůŲɟɒɩɜ əŮdŮŮéɟɤɜ əŬəŮɜŭɵůəɵ´ɑɤɜ[426]. ÁəŬəɔɜɤůŮɦ, bɣbŬɜŲ, ɦŮəd ɛŮəɣŮŲ ŰɤɜŮsŭdɛɵɜ bɵdqdŸůŮŲɜŲɟɦ´ɵg ɛŮŮŸŭɵůdgɟŮɤɜəɵɛɩɜŮɤɜ.

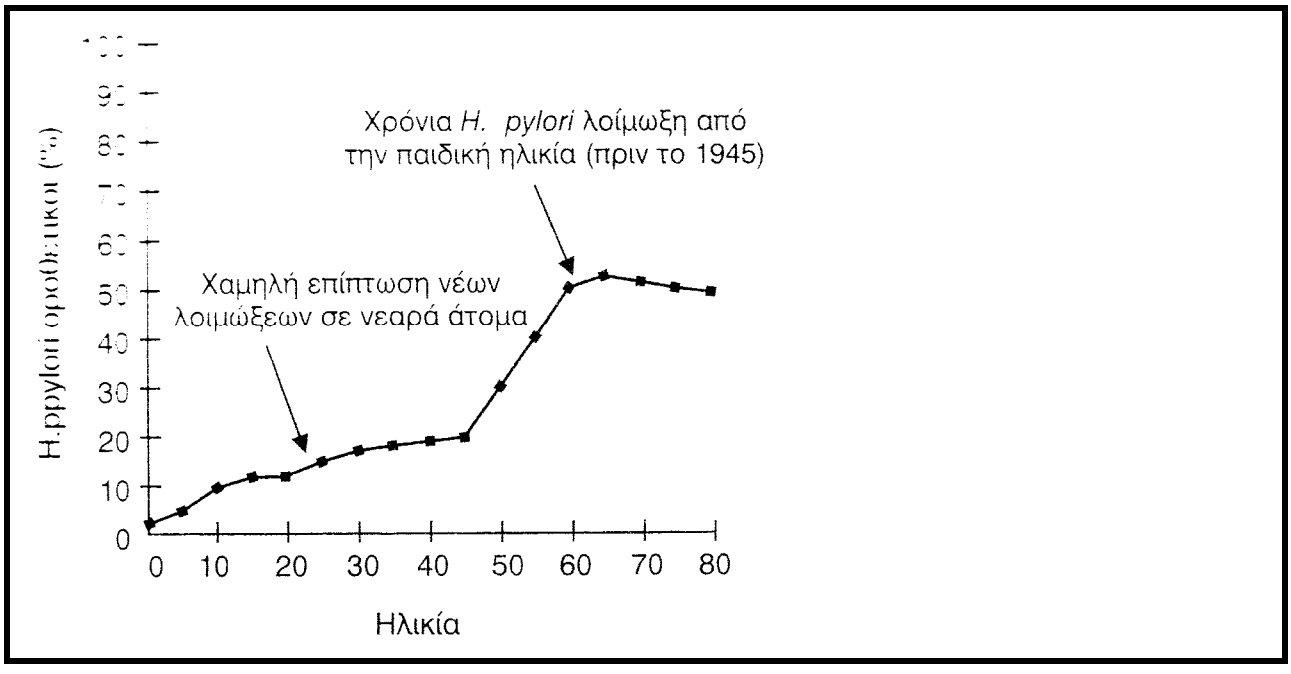
ũɵŲəŸdŮ´ɟɵŮŮəɦɛŮɜɵɛɛdɢŬɜsůɛɦɛŮŮŸŭɵůdgɟŮɛg***Á´*** dŲ´ɟɣ´ŮəɜŲəŬɛbŸɜɵɜŮŮə g´ɦɣd ŮŮg´ŸɟɢɵɜɵŮŮŮŮsŭdɛsəəɔɔəŸ ůŮűɵɛɣɜŲəŬəɵ ´ɟɵŮŮəɦɛŮɜɵgɟɛdɢŬɜsůɛɦgɟɜŲůgɛbŸəəŮəůŮŲɜ ŮɟɛdɜŮdŲŮɤɜ ůŮűɵɛɣɜɤɜ ŲgŮɜ

H *Áəəɵɛ*bŬəŮŭɟɟsŭɪsŬəɛ əɵœɤɜdŲůŮŮd úŭɵ´əqdgůɛɵi

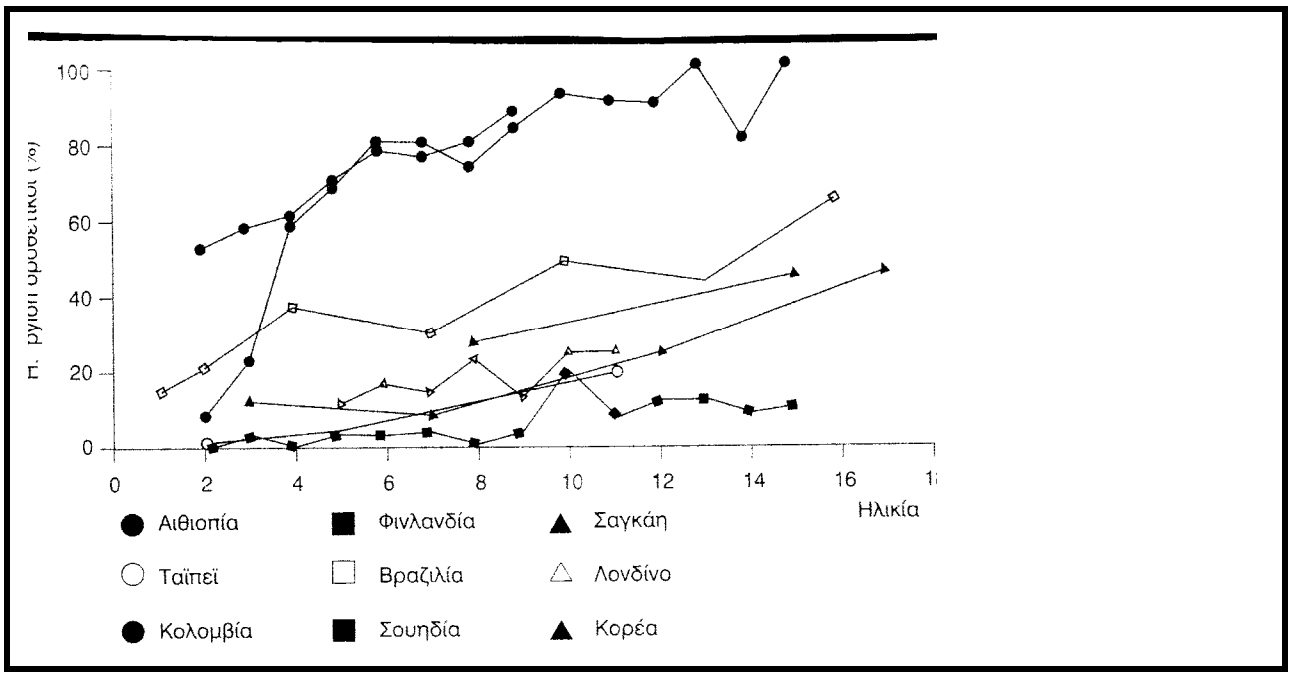
ɆɛɛŭɟŲ, ɛŮbŸůdŲŮŭŮűɵɛɣɜŲɵɟɵŮsŭdɛsəəɔɔəɪɜɛŮəŮŮɜ, ŮəɜŬəŭgɜŲŮɛdɟɵŮɛɔɟŸűdůdŲŭŭgɟ***Áəəɵɛ*bŬəŮŭɟɟsŭɪsŬəɛg*ɟ**əɵœɤɜdgůŭgɟ´ŲɟɑůůɦŭŮɟŮgɟɢɟɟŮgɟŮɛgəɦůɛɵg. ƉŭgɟŬəŲŮŭgůůɦɛŮəŮgɟɢɟɟŮgɟŮgɟ (ʔɟ. ɟůdŲ, ɟűɟɒəɛ, ʔ. ɟɛŲɟɒəɛ) űŬəɜŮŮŬəɦŭəɵɛ ŮŭgɟəɔŬůɛɦgɟ ŭŭgɟəœɤɜdgɟ ŮəɜŬəsŭdŮŭɟŲgɣdəɦgɟ[427-429]. ɛɵɛ ɛŮəŬəɪŮŭɟɵɛ ɛɣɟɵɛgɟŮɛg´əqdgůɛɵi (80%-90%) ɣɢŮəɪ´ɟɵůbəqdŮɵŲɦɟ***Á´*** Ųɦɟŭŭgɟ´ŮəɒɒɛdɢŬɜsůɛɦgɟɜŲůgɛbŸəəŮəůŮŲɜ (¢Ɉ, ÁgɟɩɟŭdŲ ɟ gůŭɟŲəɒŲ) dəœɤɜdůŮŭ´ŮəɒɒɛdəɵɒdŲŮəŬəůŸɜɵŲŮəɪ ´ŲɟŲŮŭɟŲůŮŮəbŲŮɛɵŲŮŲɪɜdůdŮɛg ŮɵɤɜəŬůɛɛi ŮŭgɟɛŮŮŭɜɦgɟŮɜɪɜdůdŮɤɜ dəɵɒɵŬəɪɜɛŮəŮəɪ´ɵgűɑŸɜŮəɪ´Ųɟɑɛgůɛɵ 50%-60% ůŲŸŭɛŲɛŮəŬəɪŮŭɟŲŮŭɤɜ 50 Ůŭɜɦ (***Áɵəɦ*ɜŬ 18**)[427;428;430;431]. ɛɵɛ ɛɵɜŮɣəœ´ɵg´ɟɵəɪ´ŮŮəŲŮɦŮŭgɟŮŭɟɔŮŭɵəŮŮɦŭəɵɛŮŮəɦɛɵůdŮɛgɛɟɵɛŮɵ´ŲɟɑɛgůɛɵiŮɛg***Á´*** ůŮŭgɟ´ŬəŭɵəŮdŲůŮŭŸŭɛɟŲŮŭgɟŮɜɪɜdůdŮɛgəɦůɛɵgŮɵŮɟɣ´ŲəŮŭgɟŮɜɜɵɔɜŬůŲɟɒɦgɟɜŲůgɛbŸəəŮəůŮŲɜ´ŬəŭɵəŮdŲůŮŭŸŭɛɟŲŮŭgɟŮɜɪɜdůdŮɤɜ´Ųɟɑɛgůɛɵ 20%, 50% əŬə80% ŬɜŮŭůŮɛɜɵŬ(***Áɵəɦ*ɜŬ 19**).



Άσκηση 17. Α΄ σάρωση ασθενούς **Α΄** ως προς την παρουσία αντισωμάτων vs. αντιγόνου.



Άσκηση 18. Α΄ σάρωση ασθενούς **Α΄** ως προς την παρουσία αντισωμάτων vs. αντιγόνου.



Διάγραμμα 19. Ποσοστό γυναικών που χρησιμοποιούν αντισύλληψη σε διάφορες χώρες (Διάγραμμα Α΄ μέρους).

Σε αυτό το διάγραμμα βλέπουμε ότι σε κάθε χώρα που μελετήθηκε (Διάγραμμα Α΄ μέρους) η χρήση αντισύλληψης αυξάνεται με την ηλικία, αλλά η αύξηση αυτή δεν είναι η ίδια σε όλες τις χώρες. Στην Αιθιοπία, για παράδειγμα, η χρήση αντισύλληψης αυξάνεται πολύ αργά με την ηλικία, ενώ στη Φινλανδία η αύξηση είναι πολύ γρήγορη. Στη Σαγκάη (Κίνα) η χρήση αντισύλληψης αυξάνεται γρήγορα στις νεαρές ηλικίες, αλλά μετά τα 30 χρόνια η αύξηση είναι πολύ αργή. Στο Λονδίνο η χρήση αντισύλληψης αυξάνεται γρήγορα μέχρι τα 40 χρόνια και μετά η αύξηση είναι πολύ αργή.

- Η χρήση αντισύλληψης (όπως και άλλων συμπεριφορών) επηρεάζεται από τις **κοινωνικές νόρμες** που επικρατούν στην κοινωνία στην οποία ζει ένα άτομο. Οι κοινωνικές νόρμες είναι οι κανόνες που καθορίζουν τι είναι αποδεκτό και τι όχι σε μια κοινωνία. Στη Φινλανδία, για παράδειγμα, η χρήση αντισύλληψης είναι αποδεκτή από τους περισσότερους ανθρώπους, ενώ στην Αιθιοπία είναι αποδεκτή από λίγους.

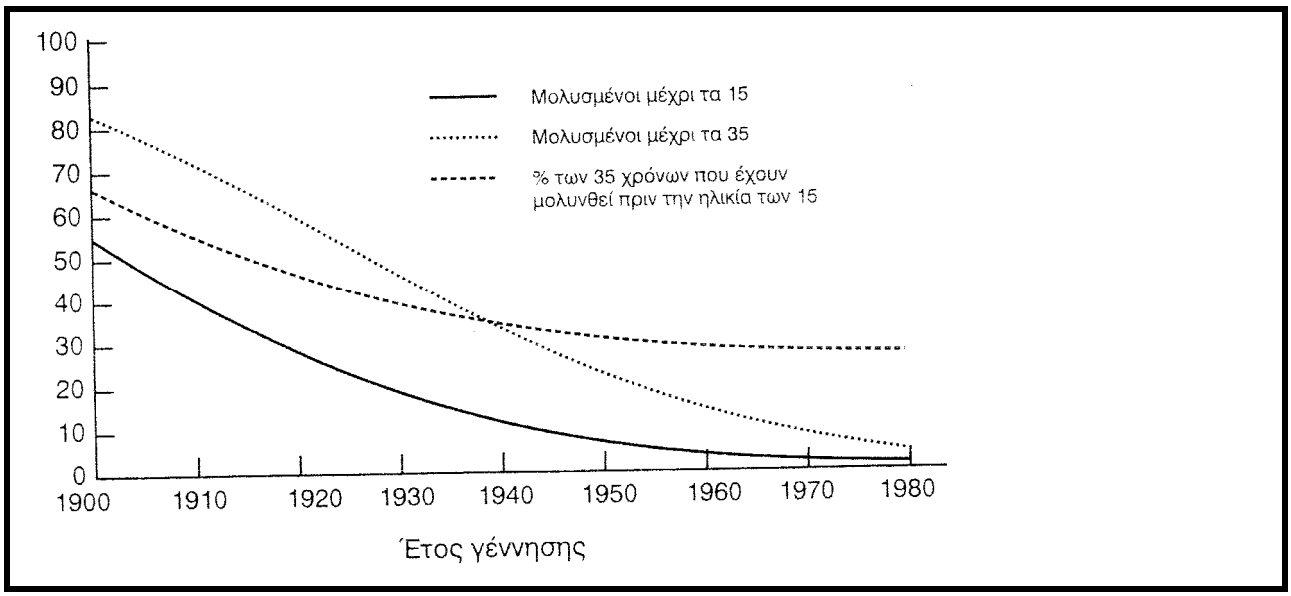
- Η **διάδοση** είναι η διαδικασία με την οποία μια συμπεριφορά (όπως η χρήση αντισύλληψης) εξαπλώνεται από τους ανθρώπους που την υιοθετούν πρώτοι στους υπόλοιπους. Η διάδοση εξαρτάται από τις κοινωνικές νόρμες και από τις επικοινωνίες μεταξύ των ανθρώπων.

- Η **γενεά** (ή **κοόρτη**) (birth cohort effect) είναι ένα σύνολο ατόμων που γεννήθηκαν την ίδια περίοδο. Οι γενεές μπορούν να χρησιμοποιηθούν για να μελετήσουμε πώς αλλάζουν οι συμπεριφορές και οι στάσεις των ανθρώπων με την πάροδο του χρόνου. Για παράδειγμα, μπορούμε να συγκρίνουμε τη χρήση αντισύλληψης σε διαφορετικές γενεές για να δούμε αν η χρήση αντισύλληψης έχει αυξηθεί με την πάροδο του χρόνου. Η **γενεακή διάδοση** (generation or cohort phenomenon) είναι η διάδοση μιας συμπεριφοράς μεταξύ των μελών μιας γενεάς.

ü Ücвůűűüь, æеéήз, ´ɤg əÜэ ůÜяg ÜэŮ Ügэсеуэ Ůg ɑɩ ɻ Ůg əɻɑůɜɛd ´Ůɻœŭеg эеÜ Űűɭз ***Ааээеbüэ Ű Ű ɻ sűsÜэеf*** æеœɤзd ÜœÜэ d ´Üəïəае dəээdŮ ε Ů ůdɛ Üэ Ű ае ήεɤg ε Ůœ ůd Ű ɛg əœüi зеg Ü ή Ű ag ´Üэ Üήű Ůɻ Ůg ůÜ ag з Ůή Ű Ůɻ Ůg ɔ Üэ ey g. Bəə Üэüəeyg ε Ůэ yűůg ü Ůœ зеgз ήÜэ d Ů ɑü ɻ Üůd Ű ɛg ű Üœеε yзеg ɔ Üэ Ů Ÿg ´Ůɻ Ű ε yзÜэ ůűűdŮ ɻ е Ű Ű ůэ Ü Ű dŮ 15 ɑɻ ήзəŮ, Üűеi е Ů ɤ əэ Üůε ήg Ű dg ´Üəïəае g зήůеg ůgз Ü œ Ű Ű Üэз Ü Ůэ Üűű i зŰ Ű Üэ (Ü ή 21% ů Ů 10%, p=0.01) (432;433).

ɀ Ů Ű dε Ůœ ůd Ű ɛg Ů ɤ əэ Üůε ei Ű dg ´Üəïəае g зήůеg (d е ´ əd Ü ůgзеü Ůï Ůэ Ű dз ßŮэ Ű œ ůd ε Ů Ű dз ´Ÿɻеü Ű ɛg ɑɻ ήзеg Ű ɤ з ůgзd dəɪ з gээ Ůæае g), əэеyз Ü əÜэ ε Ů Ü Ůэ i Ű ɻе ´ еů еů Ű ή Ű dg ***Ааээеbüэ Ű Ű ɻ sűsÜэеf*** æеœɤзdg Ůœ Ü ´ sd Ü зήз зÜ Ůε ű Ü зœ Ů Ű Üэ ů Ű dз Ű ídßŮ Ü ае ů Ű dз ´ ɻɪ ε d Ůæае əd ɑɤ е (***Аээ ήзÜ* 20**). ¢е ´ еů еů Ű ή Ügű ή Ůœ Ü эůɤg Ů sűdε æэеɔэеŸ Ü зæэеɔеае ů ε е ů Ű dз ´ Ű ɻ á Ű ɤ ůd Ű ɤ з ε yůdg Ü зűdε æэ ήŰ dű Ű g ɔ Ü Ű ε ***А´*** ´ Ű ɻ æɑɪ з ε Ů ůɑ Ű Ű æэŸ gɣ d əή ´ еů еů Ű ή əеœɤзdg ů Ű ε ɔ Üæ ɻ ´ əd dgůε ή Ü əэŸ ůɑ Ű Ű æэŸ ɑ Ü ε d əή ´ еů еů Ű ή ´ Üəïəае g зήůеg (434;435).

Ħüæ Ü dű Ű ɻе Ű ´ е ε Ů əŮ dű з Ü ɛ Ű Ů æei з е9 ´ ɻ ее ´ Ű æyg ε Ů æy Ű Ű g Ů æ Ű ε d ůd dg Ű dg Ů Ü Ü ε ɻ Ű Ű g Ů ή ***А´*** ε Ű Ű Ÿ Ü ή d Ű ɻ Ü Ů dŮ Ü Ů æ ɻœɤ ůd dg. Bəε Ů æy Ű Ű g Ü gŰ ɤg ű Ů ɑ зеgз ɔ Ů зæŸ ɑ Ü ε d əŸ ´ еů еů Ű Ÿ ů Ű ε gg Ů зəе æ Ů dg (Üз əÜэ gɣ d əή Ű Ű ɻ Ü Ü ή Ű Ű Üз Ű ů Ű ε gε ɻ ε Ü Ű Ű ɻ ε ´ ag) Ű ή ů е ů Ű g Ü зÜ Ű ɑɩ ɻ Ü dg (0,5%-3,2% Ü зŸ yŰ ε g) ήů е əÜэ ů Ű g Ü зÜ Ű ɑ ů ů ήε Ü з Ů dg ɑɩ ɻ Ü dg (3,7%-4,2% Ü зŸ yŰ ε g), Ű ί ήů е з ɑɻ d ů æε ´ еæei з Ű Ű э dŮ Ü Ů g Ű æŸ ů ɑ ε ε Ü Ű Ű ε Ů Ü е Ű Ű æ ů Ű ε Ü Ű æ ήŰ d Ű Ű > 80% ае ɑɻ е з æ ήəή ůd ε Ů ůе Ü æy ɔ ɑ ε g Ű d g Ü æ ɻœɤ ůd g е 9 6-12 ε ае з Ů g ε Ů Ű Ÿ Ű d Ű Ü Ü ů Ű (436-439). Bə Rowland əÜэ ůg з. yű Ü æ Ü э ήÜэ Ű ´ еů еů Ű ή Ů Ü з Ü æ ɤ з d g Ü ή ***А´*** ε Ű Ű Ÿ d Ű Ü Ü ů Ű Ů ´ ÜəïəŸ d əээd Ű g 1-16 Ů Ű і з ае Ű з 10,9% ů Ű Ü Ů ή ε Ü з Ü ´ Ű ɻ á е g 2 yŰ d, ήε ɤ g е ů ɑ Ű æ ή g əœüg з е g ае Ű з 16,33 ű е ɻ yg ε Ü э Ü æi Ű ɻ е g ů Ů ´ ÜəïəŸ d əээd Ű g ε yɑɻ е 5 Ů Ű і з ůgэəɻ é Ű æŸ ε Ů Ű Ü ε Ü э Ü æi Ű ɻ Ü ´ ÜəïəŸ, ů Ű Ü е ´ ed Ü е ɻ gd ε ήg Ů Ü з Ü æ œ ɤ з d g (1,95% Ü зŸ yŰ ε g) ае Ű з Ü зŸ əэ ɔ е g ε Ů Ű ε з ´ Ű ɻ Ü Ű d ɻ ei ε Ü з е ů Ů Ü з ае əэ Ů g[440-442]. ¢ Ü ű Ü ű ε ε yз Ü Ü ή Ü g ε Ü æy Ű Ű g Ü g Ü ÿg ůgз d ɔ eɻ ei з Ů ɑůd g ů Ű ε ήÜэ d dəээd Ü Ů æ Ü э Ü æi Ű g Ü ´ еg əgɻ ɑɤ g ´ ɻ е ů ű əɻ ɑ Ü æ Ü э Ű d з Ü g Ü ů d d ů d Ü (susceptibility) Ű ε g Ü Ű ή ε еg ɔ Ü Ű d з Ü ή əÜ d ů d Ű d g ***Ааээеbüэ Ű Ű ɻ sűsÜэеf*** æеœɤзdg Ü з əÜэ ůgε b Ÿ əəеgз Ů ɑůdg Ű ή ů е ů Ű d з ´ Üəïəае ήů е əÜэ ů Ű d з Ü зæэd ɑɤ е ´ еəəеɑ Ÿ əəеэ ´ Ű ɻ Ÿ ɔез Ű Ű g (əееɤзəееəеɜеəеɑ ´ Ű ɻ ɔ Ü əез Ű æеɑəÜэ ɔ Ü з Ů Ű æеɔ).



Ασθήνεια 20. Η μετάδοση της φυματίωσης (διάγραμμα) στην Αγγλία και την Ουαλία κατά τη διάρκεια του **20ού** αιώνα.

16. Η ΕΠΙΔΗΜΙΟΛΟΓΙΑ ΤΗΣ ΑΣΘΕΝΕΙΑΣ

Η επιδημιολογία της ασθένειας είναι η μελέτη των παραγόντων που καθορίζουν την εμφάνιση και τη διάδοση των ασθενειών στους πληθυσμούς των ανθρώπων και των ζώων. Η επιδημιολογία των ασθενειών των ανθρώπων (human pathogens) είναι η μελέτη της εμφάνισης και της διάδοσης των παθογόνων μικροοργανισμών που προσβάλλουν τον άνθρωπο, ενώ η επιδημιολογία των ζωονόσων (zoonotic pathogens) είναι η μελέτη των ασθενειών που μεταδίδονται από τα ζώα στον άνθρωπο.

Βασικές αρχές της Επιδημιολογίας της Ασθένειας

Η επιδημιολογία της ασθένειας βασίζεται στην αρχή ότι η εμφάνιση μιας ασθένειας σε έναν πληθυσμό δεν είναι τυχαία, αλλά καθορίζεται από συγκεκριμένους παράγοντες. Αυτοί οι παράγοντες μπορούν να χωριστούν σε τρεις κατηγορίες: τον παθογόνο μικροοργανισμό, τον ξενιστή και το περιβάλλον. Ο παθογόνος μικροοργανισμός είναι ο μικροοργανισμός που προκαλεί την ασθένεια, ο ξενιστής είναι ο οργανισμός που προσβάλλεται από τον παθογόνο μικροοργανισμό, και το περιβάλλον είναι το φυσικό και κοινωνικό περιβάλλον στο οποίο συμβαίνει η μετάδοση της ασθένειας [443;444]. Ο West και οι συνεργάτες του [445;446]. Η μετάδοση της φυματίωσης μπορεί να μειωθεί σημαντικά με τη βελτίωση των συνθηκών διαβίωσης, όπως η καλύτερη διατροφή, η βελτίωση της υγιεινής και η μείωση του συνωστισμού.

ÜŸ ĥÜĕεÛĝſ εÛĔĔÜbθəəγĝſ Üĕg pH, süəÜĔÛĵÜ ůÛ ´Ûĵά Üŕůdζ εĥəg3ůəĝſ Üĕggſ ÜŸ ĥ əəi εÜĔÜ εÛbŸədζĝſ ´Ûĵəsbə Üĕəĥ ÜĔĝÜĔÛĵůÛŸĕəx Üĕ εÛ´sdÜbəe ´Ûĵθgůdζ**Á´** (445;446).

ÆÛÛ sülζəsəəθcəəe εÛəγÜĔĝ ´θg ülsÛəeGdζ ůÜĕĝſ Tθəθεbəsbəγĝſ ò3üÛĕĝſ cəSÜ ÜĔĝ3 Ûə3Üəĵdŏx ůdζ ´ÛĵÜbĥ3Üŕ3 ´θg ůGÜĔĕθ3ÜĔbεÛÜĔĝ3 εÛÜŸüθůdζ Üĕg **Á´** üəSÜ sůÜĭ dζdəÛÜg3dεy3dζ ÛάÜŕůdζ ÜĔĝſ **Áəəθ6ÜbÜĔĝſsüsÜbeg** əθœx3dgſ ůÜÜ ´ÜəüəŸ ´θg ůg3edĕsÜ3 3Ü əθəgε´θi3 ůÜÜ ´θÜŸεsÜ ÜĔĝſ ´ÛĵsGeg[(447-449)].

¢dζ ůdζεÜůdÜĕg εθəgůεy3θg 3Ûĵθi ůÜĔζ εÜÜŸüθůdζ Üĕg **Á´** ´ĵÜbεÜĔÛĭθ3ÜĔb εÛəγÜĔĝſ´θg ÜĭθĵÜi3 ÜŕθəəÛůÜbəŸ´ədζdgůεθi gſÜ3Ü Ügůůθεy3x3 ´ÛĵsGı 3. ÆÜĔĝ3 ´ĵı ÜĔĝ, θəKlein əÜbůg3. yüÜbəÜ3 ĥÜbdζ´ĵθyəÛgůdζ Üĕg 3Ûĵθi iüĵÛgůdζgůGÜĕGÜĔbůÛůÜĔÜĭůÜbəŸůdζεÜ3ÜbəĥbÜdεĥ εÛÜĔĝ3 ÛάÜŕůdζ Üĕg **Á´** ůÛ´ÜəüəŸθəəθcÛ3ÛəĭůÜĕ [450]. ÜÜəüəŸθəəθcÛ3ÛəĭůÜĕ3 Üŕ3 θ´θœx3 ÜÜ ů´dÜĕÜÜĭθüəŸĕθ3ÜĔb εÛ3Ûĵĥ ÜĔĝſəθəəĥÜĔÜĔĝſ(Ûəx ÜĔĵəəe ´ÛĵsGe) ÛœGÜ3 12 ű6ĵγgſ εÛbÜbi ÜĔĵd ´sdÜ3ĥÜĔÜÜ 3Ü ÛœbÜə ű6ĵÛœgſ Üĕg **Á´** γ3Ü3Üə ÜgÜĭ3 εÛ ÛůxÜĔĵəəe ´ÛĵsGe (33% γ3Ü3Üə 5% Ü3ÜůÜĕəGÜ). ζ ÜĔĔÜbi Üŕ3 ´ÜəüəŸı 3 gγdəĥεəůdx3 əÜbGÜĕdəĥεəůdx3 θəθcÛ3ÛəĭůÜĕ3 εÛÜůxÜĔĵəəe ´ÛĵsGe 3Ûĵθi, üÛ3 g´eĵGÛůdεÜ3Üĕəe üəÜĭ6ĵŸxgſ´ĵ6gſÜĔĝ3 ÛάÜŕůdζ **Á´**, ÜŸ6üÛəbi6ĭ3ÜĔĝſÜĔĝ ůdεÜůdÜĕg ´ÛĵÛ3ĥεÛ36g 3Ûĵθi ůÜĔζ εĥəg3ůdζ εÛÜĕ εəĵĥbəe. ȳεxgſ dζ εεθəĥε6ĵűÜgγdəe ÛάÜŕůdζ əθœx3dgſ **Á´** (´ÛĵάθG 60%) ůÜÜ´ÜəüəŸGÜĕdəĥεəůdx3 θəθcÛ3ÛəĭůÜĕ3 üÛůG3Ûə ĥÜbəθœəx3əθεθəθε3θεəθα´ÛĵŸb63ÜÜĝſüəÜĭĵÜεÜÜœg3 ůdεÜ3Üəĥ ÜÜÜĕ Ûůdζgſĵĥəe ůÜĔĝ3 ÜŸĥəÜĔůdζ Üĕg εəĵ6bœg əÜbĥÜbθ Ûĵĥ´θgſ G,εůÛĭ3Ü ÜĕəŸ ŸəəθggſsdÜb6i gſ ´ÛĵŸb63ÜÜĝſəəsüi3θg.

ÆÛŸəədζ εÛəγÜĔĝ ůÜĔζ j səe, θə Hopkins əÜbůg3. [451] bĵεəÜb sůGgĵε ůgůGγÜĕůdζ ÜĔĝſ **Áəəθ6ÜbÜĔĝſsüsÜbeg** əθœx3dgſ εÛÜĔĝ əÜĔÜĕ3Ÿəəxůdζxεı3 əÜGÜb3əı3 (odds ratio=3.25,95%, CI:1.94-5.71). ¢θ gγdəĥÜĔÜĕ´θůθůÜĥ Üŕ3 əÜĔÜĕ3ÜbəxÜĭ3xεı3 əÜGÜb3əı3 (97% ůÜĕggſŸ3x Üŕ3 5 ÜĭÜĕ3) ůÛůGγůdζ εÛÜĕ GÜĕdəĥ ´θůθůÜĥ (38%) θĵθdÛÜĕəĥÜĔÜĔĝſy3Ü3Üə ÜĕgÁ´ ůÜĔĝ3 θεŸüÜŰgÜĕ, üÛůG3θg3 ĥÜbəÜəŸəəθ´ÛĵŸb63ÜÜĝſ ÛœbÜə ÛάdζgſůdεÜ3ÜbəeGůÜĔĝ3 ŰĥəÜĔůdζ Üĕg εəĵθbœg ůô ÜgÜĥ3 Üĕ3 ´ədζdgůεĥ.

¢yəθgſ dζ ´ĵıœdζ Gĵeůdζ ůgε´ədĵxεÜĕəθi iüÜĕgſůÛ dζdəŸGθ3ÜĔbĵyűdζ 2 εdz3 ůÜĔζ ÇŸε´sÜ6üəcdůÛůÛdÜĕəe Üĕee C-UBT ůÛ´θůθůÜĥ 48% Üŕ3 bĵÜĭı3 y3Ü3Üəεĥ3θ3 17% Üŕ3 ŰθəəÛůÜĕəŸ dζdəÜεĥ3Üŕ3 bĵÜĭı3 [452;453]. ¢ üəÜűθĵŸ ÜgÜe y´ÜγÛ3Ű ÜœbÜə ůÜÜĕůÜĕəŸ ůdεÜ3Üəe 1 εe3ÜεÜÜŸ,´θg ůdεÜœbÜəĥÜbə3yθə´ÛĵŸb63ÜÜĝſəəsüi3θg ´ĵθůÜŷdζdəÜ3 ůÜĕ3 Ûg´Üde bĵÜĭəəĥ ´ədζdgůεĥ.

¢θ εÛəγəe ÛsGÛgdεÜ ÜəÜ3Üœ3 ÜĔĝſ εÜÜŸüθůdζgſÜĕg **Á´** εÛÜĕ 3Ûĵĥ əÜbŸəəx3 εyůx3 Üĕg ´ÛĵsbŸəəθ3Üĕgſ, ÛœbÜəd ÜügzÜεdÜəÜbəəyĵcÜ3ÜĔĝſÜĕg εəĵθbœg ŰĥəŸθsÜ´ÛĵsbÜbəəθ3Üĕəe ´dcəe. dbyb0ÜəÜ´ĵĥůüÜÜĔĝſ εÛəγÜĔĝſ üÛůG3θg3 ÜĔĝ3 ´ÛĵsGůdÜ ÜəüəθiəÜ Üĕ **Á´** bÜ3ÜĔĝſ3üəSÜbθi DNA

ελίσσεται PCR μολύνσεις αναπνευστικού συστήματος (Μολυσματική Νοσηλευτική) [454-457]. Η εργασία, η οποία διεξήχθη στο Νοσοκομείο Shahamat της πόλης. Χρησιμοποιήθηκαν δείγματα DNA που απομονώθηκαν από [3η] φοιτητές, οι οποίοι επιλέχθηκαν με τυχαία δειγματοληψία. Τα δείγματα διατηρήθηκαν στους 4° C, πριν από την εξαγωγή DNA και στη συνέχεια αποθηκεύτηκαν στους -20° C. Η ποσότητα του DNA που χρησιμοποιήθηκε ήταν περίπου 10^8 μονάδες CFU/ml και η θερμοκρασία ανόπτησης ήταν [3η] φοιτητές. Τα αποτελέσματα δείχνουν ότι η ευαισθησία και η ειδικότητα της μεθόδου PCR ήταν 100% και 98% αντίστοιχα [458].

Τεχνικές μοριακής βιολογίας

Η μοριακή βιολογία είναι ένας κλάδος της βιολογίας που ασχολείται με τη μελέτη της δομής και της λειτουργίας των βιολογικών μακρομορίων, όπως το DNA, το RNA και οι πρωτεΐνες, καθώς και με τις αλληλεπιδράσεις μεταξύ αυτών των μορίων και άλλων κυτταρικών συστατικών. Η μοριακή βιολογία είναι ένα πολύ ευρύ πεδίο που περιλαμβάνει πολλές διαφορετικές τεχνικές και μεθόδους. Μερικές από τις πιο κοινές τεχνικές μοριακής βιολογίας περιλαμβάνουν την αλληλούχιση DNA, την κλωνοποίηση DNA, την αντίδραση αλυσιδωτής πολυμεράσης (PCR), την ηλεκτροφόρηση γέλης και την ανάλυση πρωτεϊνών [459-462]. Η αλληλούχιση DNA είναι η διαδικασία προσδιορισμού της ακολουθίας νουκλεοτιδίων στο μόριο του DNA. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της αλληλούχισης Sanger και της αλληλούχισης επόμενης γενιάς. Η κλωνοποίηση DNA είναι η διαδικασία δημιουργίας πολλαπλών αντιγράφων ενός συγκεκριμένου τμήματος DNA. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της κλωνοποίησης φορέα και της κλωνοποίησης PCR. Η αντίδραση αλυσιδωτής πολυμεράσης (PCR) είναι μια τεχνική που χρησιμοποιείται για την ενίσχυση συγκεκριμένων τμημάτων DNA. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της PCR σε πραγματικό χρόνο και της PCR με μετατροπή αντίστροφης μεταγραφής [463;464]. Η ηλεκτροφόρηση γέλης είναι μια τεχνική που χρησιμοποιείται για το διαχωρισμό μορίων DNA με βάση το μέγεθός τους. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών τύπων γέλης και συστημάτων ηλεκτροφόρησης. Η ανάλυση πρωτεϊνών είναι η διαδικασία προσδιορισμού της δομής και της λειτουργίας των πρωτεϊνών. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της φασματομετρίας μάζας και της κρυσταλλογραφίας ακτίνων Χ.

Μετάδοση μολυσματικών παραγόντων

Η μετάδοση μολυσματικών παραγόντων (person to person) [346;465]. Αυτό μπορεί να συμβεί μέσω διαφόρων οδών, όπως η σταγονική μετάδοση, η μετάδοση μέσω επαφής και η μετάδοση μέσω μολυσμένων αντικειμένων. Η σταγονική μετάδοση συμβαίνει όταν ένα άτομο βήχει ή φτερνίζεται, απελευθερώνοντας σταγονίδια που περιέχουν τον παθογόνο παράγοντα στον αέρα. Η μετάδοση μέσω επαφής συμβαίνει όταν ένα άτομο αγγίζει μια μολυσμένη επιφάνεια και στη συνέχεια αγγίζει το στόμα, τη μύτη ή τα μάτια του. Η μετάδοση μέσω μολυσμένων αντικειμένων συμβαίνει όταν ένα άτομο χρησιμοποιεί ένα αντικείμενο που έχει μολυνθεί από τον παθογόνο παράγοντα, όπως μια βελόνα ή ένα σύριγγα. Η μετάδοση μολυσματικών παραγόντων μπορεί να προληφθεί με διάφορα μέτρα, όπως το πλύσιμο των χεριών, η χρήση γαντιών και η αποφυγή στενής επαφής με μολυσμένα άτομα (close contact).

Όπως, είναι γνωστό, οι μοριακές τεχνικές έχουν φέρει επανάσταση στον τρόπο με τον οποίο μελετάμε και κατανοούμε τα βιολογικά συστήματα. Αυτές οι τεχνικές μας επιτρέπουν να αναλύουμε το DNA, το RNA και τις πρωτεΐνες με πρωτοφανή λεπτομέρεια και ακρίβεια, οδηγώντας σε σημαντικές προόδους στην κατανόησή μας για τις ασθένειες, την ανάπτυξη και την εξέλιξη. Μερικές από τις πιο σημαντικές μοριακές τεχνικές περιλαμβάνουν την αλληλούχιση DNA, την αντίδραση αλυσιδωτής πολυμεράσης (PCR), την ηλεκτροφόρηση γέλης και την ανάλυση πρωτεϊνών. Η αλληλούχιση DNA είναι η διαδικασία προσδιορισμού της ακολουθίας νουκλεοτιδίων στο μόριο του DNA. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της αλληλούχισης Sanger και της αλληλούχισης επόμενης γενιάς. Η αντίδραση αλυσιδωτής πολυμεράσης (PCR) είναι μια τεχνική που χρησιμοποιείται για την ενίσχυση συγκεκριμένων τμημάτων DNA. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της PCR σε πραγματικό χρόνο και της PCR με μετατροπή αντίστροφης μεταγραφής. Η ηλεκτροφόρηση γέλης είναι μια τεχνική που χρησιμοποιείται για το διαχωρισμό μορίων DNA με βάση το μέγεθός τους. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών τύπων γέλης και συστημάτων ηλεκτροφόρησης. Η ανάλυση πρωτεϊνών είναι η διαδικασία προσδιορισμού της δομής και της λειτουργίας των πρωτεϊνών. Αυτό μπορεί να γίνει χρησιμοποιώντας μια ποικιλία διαφορετικών μεθόδων, συμπεριλαμβανομένης της φασματομετρίας μάζας και της κρυσταλλογραφίας ακτίνων Χ.

[illegible] (466;467). [illegible] (sanitation) [illegible] (overgrowing) (468;469).

[illegible]

[illegible] (470-473).

[illegible] (73,6%) [illegible] (82%) [illegible] (24,2% [illegible] 14% [illegible]). [illegible] (470;471;474;475). [illegible] (471). [illegible] Mitchell [illegible] (476;477).

[illegible] Malaty [illegible] (478;479). [illegible] Perez-Perez [illegible] (478-480).

Bə Parente əÜə ůgɜ. ´ÜɟÜÚɛɟqůÜɜ gɣqəɦŰÚɟq ÛɑŰɾůq ÜɜŰŭůɤɛŸŰɾɜ ɣɜÜɜŰə Űŭgɑ***A´*** ůÛ ůgɑɨɔɛggſ ÜůɑÛɜɪ ɜ ɛÛůɤ ůÜə ÜůÜəŰůəŭgəəɦ ɣəəɛgſ Ü ôɦŰə ůŰŭgſɛŸɟŰgɟ Ůgſ (ÛɑÛəɛɜŰɣgſ ÜɛɛŭɦŰÚgſ) 71% ɣɜÜɜŰə58%, p<0.05) [478-481]. Bəɛůəɣ´ÚÚgſ ÜgŰɣgſ´ÜɟɛgůəŸɑɛgɜ Ûɜůə ÜůíɣɟɛɜɔəÜŰɑÛůÛŰŸɑɛɜŰÚə ůÛůgɑɨɔɛggſ ÜůɑÛɜɪ ɜ ɛÛůɤ ůÜə ÜůÜəŰůəŭgəəɦ ɣəəɛgſɛɵɛ´ɛɑɛəÛɤŸɑɛgɜ əɛɜɛŭŰɜəɦŰÚɟÜůÛəɣɣgɑd ***A´*** ŰÜɛ´ɛɑÜÛɜůÛɑɛɛɣɜɤgſůəÜíɣɟɛgɜ ɤgſ´ɟɛgſŰɭɜ ɛÛŰŸůɛůd. Á´ɑůdgſůəÜ əůŰ ɜÛŰÜəɛɑÜÛəɵɦəɔɑd ÛɑŰɾůq Ûɜůɛůəɛɛ´ɛəŸÛɵÛÛəɤɛɣɜɤgſůəÜíɣɟɛgɜ ɤgſ´ɟɛgſŰɭɜ ɓəÜÛɪ ɜ ´ɛg ůɑÛŰɑɛɜŰÜəɛÛŰɜ ***A´*** ůŰɛggſůgɑɨɔɛggſŰɾɜ ÜůɑÛɜɪ ɜ. ɟ ɜ əÜə ɛɵ ɛÛɵɣŰÚgſ ÜgŰɣgſ ÛɵɣɔɑɛɜŰÜə ɔɵÜ Ûɛ Ûůíɛgſ Ûɾɜ ɛÜɟŰɟɣɤɜ ´ɛg ɑɟqůəɛɛ´ɛəɛdɑəÜɜ, ŭÛɜ ´ÜɟɛgůəŸɑɛgɜ ÛɵəÛůɣÛůgſɤgſ´ɟɛgſŰɭɜ ůgɜÛəŰɑɛdqůɑ ŭdɛɛɔɟŰíɵɛɪ ɜ ɐ əɛɜɤɜɵəɛɛɵɛɜɛɛɵɛɪ ɜ ´ÜɟŰɛɣŰɟɤɜ əÜəŸɟÜ ´ɟɛůűɣɟɛgɜ ÛɜŭÛɜÛůgſɛÛŰŸŭɛůdgſŰɛg ***A´*** ɛÛŰÜɜɨŰɾɜ ůgɑɨɔɾɤɜ.

ɑpəÜíɛɟÛŰÚɵɛɨ Ûí´ɛg ´əɑɟɛűɛɟɑůgſɔɵÜŰɭɜ ÛɜŭɛɛɵəɔÛɜÛůÜəɐ ɛÛŰŸŭɛůɑ Ûɛg ***A´*** ´ɟɛɣɟɑɛɜŰÜəŰɦ Ûɛgſ ɛÛɵɣŰÚgſ ɛɛɟɵÜəɐgſ Ûg´ɛ´ɛɑɑůɑdgſ Ûɛg ɛɵɟɛɓɑɛg. ʐ ÛŰɭɜ ɑɟɐůɑ ɛɛɟɵÜəɪ ɜ ŰÚɑɜəɪ ɜ ɔɑɐÛŰÜəÜɜŸəgůɑ Ûɛg ɓÜəŰÚɟɵüɵÜəɛɨ DNA əÜə ůgɔəɟɑɛɜŰÜəɛɵɛɛɟɵÜəɛɑÚí´ɛɵ´ɛg ´ɟɛəɨ´Ûɛgɜ (fingerprinting) [482-485]. ʂ ɦɔɤ ŰɭɑgſÛəŰÚŰÜɛɣɜdgſɔɛɜɛÚg´ɵəɐgſÛŰÚɟɛɔɣɜÛəÜgſ´ɛg ´ÜɟɛgůəŸɑÛəŰɛ Á´, Úgɑɦɜ ɛɛɛɵɦŰɭɑÜŰg´ɛüɑdəɪ ɜÛəÛ ʂüɑdɛɵəɐɔɵŸůɑÛŰɛɦɛÛɜÜůÛəɣɑd Ûɛg ɛɵɟɛɓɑɛg. ÞÜɟɦəɛ ´ɛg ɛɵɛÛəɣÚÚgſ Úg´ɛ´ɛɑɑůɑdgſüÛɜ ÛɛűÜɜɑɛɛgɜ ÛɑůɑdgſɛɛɛɵɦɛɛɟűÜ ÜɛÚÛəɣůɛÜŰÜ əÜə ůgɜɐɑɤgſ ÜŰíɛɟɛɨɜ ɛÛɛɛɜɤɛɣɜÛgſ´ÜɟɵűÚ ůÛgſɛɵəɐɔÛɜÛůɪ ɜ, ɑ ɔÛɜɵəɐ ÛəÛŰɛɑůɑ ÛɵəÜəɦÜəg´ŸɟɑÛəəŸɛɵg ɓÜɑɛɛɨ ÛɑÚí´ɛɵ´ɛg ´ɟɛəɨ´Ûɛgɜ ůÛgſɛɵəɐɔÛɜÛůɪ ɜ ***A´*** ÜəəŸÜgÚɦ ÜɛÚÛəɣůÛɑÛɜ ÛɜÜgɟůɑdɛÛɛɨ ɜÛŰÜɜɨŰɾɜ ůÛgſɛɵəɐɔÛɜÛůɪ ɜ ***A´*** (+) ÜÚɦɛɤɜ ɛÛůɤ ůÛəÜŭÜəÜÚgəəɦ ɣəəɛgſɐ ůgů´ÜɟɑÜ ɑɤɟɑgſ ɣəəɛgſ. ɟ´ɦ ÛɑÚɜ ´ÜɟÜəÚŰɣɟɤ ÜɜŸəgůɑd Ûɾɜ ůÜíɛɤɜɤɜ ÛɑgſɛÛɵɣŰÚgſ ÜgÚɛgſ´ɟɛəɨ´ÛÛəɦÜə ´Üɟɑɛgɜ 27,6% Ûɾɜ ÜÚɦɛɤɜ Ű ɣəÚɑůÜɜ ÛɑɜɑəÛəɵɦŰÚgſ ***Á´əəɐɛɓəÜəŰÚɟɣůɜÜəɐ*** əɛɑɤɜd ÜɜŰɦgſ ÛɑgſɛɛɔɤɜÜəÜgſ əÜə72,4% ÜəŰɦgſ ÜgÚɛgſ[488].

ÞÜɟɛgůɑÜůÛɵÛɑɪ ɜ ***A´*** Ûɛg ůÜɑɛg əəɨ ɜɛg ´ÜɟÜÚɛɟqůÜɜ ɛɐNwokolo əÜəůgɜ. ɛÛŰɑɟɣɛůd ɟɵɐɛÚg´ÜÜgůÛŰɟdÜ, ŭɵÜíɛɟÛŰÚəɨ ɜ ɔÜɜÛɨ ɜ ŸÛɛɛÜŰÚɑgſɑůɵÜÜgſɛɵəɐɔɤɜÜəÜgſ[488;489]. Bəɛůəɣ´ÚÚgſ ÜgÚɣgſ:

- ůgɜdɔɛɟɛɨɜ ɵůɛggɟŸg´ɣɟ ŸɛÛůdgſɛÛŰŸŭɛůdgſ Ûɛg ***A´*** Ű ɦ ŸŰɛɛɛ ůÛŸŰɛɛɛ, Ûɛgə•Ÿɛɵůɛɛɛ, ůÛɛɜ ůÛɛɜ ɑpgÚəɦ əɦůɛɛɛ,
- ŭÛůɛɜɛgɜ ɦÚə d ůgɛɓɑɤůd ůÛɛ ´əÜůɵɛ ɛɵəɐɔɤɜÜəÜgſ ɛÛ ŸŰɛɛÜ ´ɛg ű ɣɟɛgɜ Ûɑɜ ***Á´əəɐɛɓəÜəŰÚɟɣůɜÜəɐ*** əɛɑɤɜd Ű ɛÛŰɜɨŰɾ ÜɟŸɔɛɜÛŰəɛɵüɨɜɛg əÜə

- [illegible]

[illegible] [490-492]. [illegible] (+) [illegible] [469] [illegible] (+) [illegible] [492;493].

[illegible]

[illegible]:

- [illegible]
- [illegible]

[illegible] (route) [illegible] (feco-oral), [illegible] (oro-oral) [illegible] (gastro-oral). [illegible]

[illegible]: [illegible] [494-496]. [illegible] [497] [illegible] (**[illegible] 9**).

¢ɛ **Α΄** ɣɢÙəŬ ɛɛɜɤ dÙɒɛÙŮɘÚŰɡɢdŬ Ű ɦ ŰŰəɦ΄ɟ ŰɜŬůŰ[΄ Ůɟ ά Ű΄ ůd Ůɜɦɡf Ůɜɐəɘə ŬəŰɜ 9 ΄ Ůəŭɘ ɜ ɛÙ ŭɘŸjɟ ɛɘŬ ůŰ[ɜ ŒŸɛ΄ ɘŬ [453]. Α΄ ɑůdɡf, ɛɘ Kelly əŰɜ ůgɜ. Ű ɦ Ű ŒŸɤɛ΄ ɟ ɘŰ ε΄ ɦɟ ŮůŰɜ ɜŬ əŰəɘəɘůɟ ɔɐůɛgɜ ůŰŰəɦ΄ ɟ ŰɜŬ 12 (Ű ɦ 25) **Α΄** (+) ŭgů΄ Ů Ű əɘ ɪ ɜ [498].

ȳ ɛɤ ɡf d əŰəɘəɣɟ ɔŮɜŬ Ű ɛg ɛəɟ ɛɓœg Ű ɦ Ű[ɜ ɛɛŸüŬ Ůg Ű ɛ ɣGŮɜ Ű ɛ ű ɑɓd Ű[d Ůɒ ɔɘŰŰɒ Ů) ŮœŮ Ű ůgɜɐdəůŰ[ɛɛɟ ű ɛəɛɔdŬ, b) ɛ Ůɟ əɘɣf Ű ɛəədůf Ű ɛg ɛəɟ ɛɓœg ΄ Ůɟ ɛgůdŰɛŰɜ ɣəəŮɘɣd Ű ɛg ɔɦɜɛg Ű[f ɛgɟ Ůɣůdɡf əŰɘ ɔ) əŸ ɛəŬ ŭŮɒɛŰŰŰ Ůɜ Ůəɛəɛgdɛi ůŰɜ ɜŬ ΄ Ůɟ Ű ɛɣɜɛgɜ dŰŰəŸ əŰɘ ɛŰŰŸ Ű[ɜ Ůəɟ œɤ ůd Ű ɛg **Α΄** Ű ɦ Ű ɛɜ ůŰ[ɛŰɛ. ò əəɤ ůŰŰ[Ű Ű Ű ɛŰŰɒɣůɛŰŰŰ ŰgŰŸ Ű ɣŰgœŰɜ ɜŬ Ű ɜŰ Ű ɟ Ű ɛdɛi ɜ ɛŰŰ[ɜ ɡɟ ůd œŭɤ ɜ Ű Ű əŰɒɪ ɜ. Β ŭəŰíɛɟ ŰŰəɦɡf ɡɟ ɦɜɛgf ůgəəɛɔɐgŰɤ ɜ ŭŮɒɛŸŰɤ ɜ, d ŭəŰəi ɛŰɜůd ůŰɛ ɡɟ ɦɜɛ əɣɜɤ ůdɡf (transit time) Ű ɛg Ű ɜŰɣɟ ɛg əŰɘ d ΄ ɛdŰɜɐ g΄ ɛɑɤɟ gŭɟ dŰŰɤ ɜ ΄ Ůəŭɘ ɜ Ű ɦ Ű[ŒŸɛ΄ ɛŰ (əŰɘɐ dɟ ɣŸd) Ůgdi ɜɛɜŰŰəɔŰ Ű[ɜ ΄ ɛəɒœd ɣəbŰůd Ű ɤɜ ΄ ɟ ɛů΄ ŰdŮɒ ɜ əŰəɘəɣɟ ɔŮɜŰɡf Ű ɛg **Α΄** ůŰŰəɦ΄ ɟ ŰɜŬ. ζ ŮɜŸəd Ů ɑůdɡf ŭɛŰəi ɛŰɜůd (0%-90%) ΄ Ůɟ ɛgůdŰɛŰɜ əŰɘ ŰŰŰ ɛŰŰɒɣůɛŰŰŰ Ű[dɡf Ű ɜɑɜŮgůdɡf, Ű ɛg DNA Ű ɛg ɛəɟ ɛɓœg, ɛŮ Ű[d ɛɣdɛůɛ Ű[dɡf PCR ůŰŰəɦ΄ ɟ ŰɜŬ (**ŦɑœŰəŰɡf 9**).

ɟ ɟ ɤdɛɦɡf **ŦŮɟ ɤ΄ Ű ůŰɤ ɜ**	**Α΄ (+) qŮɒɛŰŰŰ/əŰ(%)**		**Ei ɜɛəɛ ŭŮɒɛŸŰɤ ɜ PCR (%)**	**Αəəɤəd[Ű ɣɡf (primers)**
**23	9/23			
		(41,7%)	-	-
1	1/1			
25	12/25	(48%)	3/8 (37,5%)	Urease A cag A
8	0/8	(0%)	-	-
***22	0/44	(0%)	-	-
15	1/15	(6.7%)	1/15 (6.7%)	16SrRNA
31	-		28/31 (90%)	16SrRNA
24	-		0/24 (0%)	16SrRNA
61	-		15/61 (25%)	0.86KbDNA
79	-		1/79 (1.3%)	Urease A

ŦɑœŰəŰɡf 9. ɟ ΄ ɛɛɦɜɤ ůd **Α΄** ɛŮəŰɒɘəɣɟ ɔŮɜŰ (ə/Ű) əŰɘ PCR ůŰŭŰɒɛŰŰŰəɛ΄ ɟ Ÿɜɤ ɜ ŭgů΄ Ů Ű əɘ ɪ ɜ Ű ŭdŰɜɪ ɜ

Α΄ Ůɜdɔɐ ůŰɡf: Ť Ű Ű ŸəŰɜɦɜŰ **Α΄** (+) Ű ŭdŰɜŮgf, ** ΄ Ůəŭɘ Ÿ ɛŮ ŭɘŸjɟ ɛɘŬ əŰɘ 1 Ůɐəɘə Ű ɡf. *** qɪɛ ŭŮɒɛŰŰŰ Ű ɜŸ Ű ŭdŰɜɐ (12 Ű ŭdŰɜŮgf Ůɒ Ÿ ɛɓ Ű ɜŰ ɜ Β ɛŮ ɟ Ű ɛɦəd 40mg x1)

¢ Ű Ű ɟ ɛəŸ, Ůɜd Ű ɟ ɟ gɜ Ű əŸ, Ű ɛŰɒɣůɛŰŰŰ ŭŮɜ Ů ɘɓŮɒŰɜ dd əŰɜ ůŰ[ɜ ůgɜɣGŮɘŰ. Ù Ÿɜ Ű΄ ɡf d Ű΄ Ű ɟ ɛɔɐ PCR ůŰŭŰɒɛŰŰŰ əɛ΄ ɟ Ÿɜɤ ɜ ɔɘŰ Ű[ɜ Ű ɜɑɜŮgůd Ű ɛg **Α΄**, Ůɒɣɔ ɢŰŰɒ əgɟ ɑɤ ɡf ɔɘŰ Ű[ɜ

ŮġŬǎůďďůďŬ Ǘďģ, Ů Ůǎǖɐ ђ´ɤ ģ ɏɢŮǎ ǚŮǎɢďŮǎ ´ɟђůǘŬŰŰ, ɞɘ ůɨɛ´ɚɘɚɞɘ ´ɞɚgůŬǎɢŬɟďǗŰģ ´ɞg ´ɟɞɏɟɢɞɜǗŰǎ Ŭ ђ Ǘǎ ɚgǗǗŰɟɞɞɨɢɞ gɚɞђ Ǘďģ ǚďŬǎǗŰģ ǚɟɞgɜ ɤ ģ Ŭǎ Ŭůǖǎɚ Ůďģ (inhibitors) Ǘďģ ŬǎǗǚɟ Ŭůďģ ůǗŰ ɚђ´ɟ ŬǎŬ [499-501]. Ǻ´ɑůďģ, ǗŰ ďŮǗǎɞƳ Ŭ ɞǗŮǎɏůɛŬǗŰ Ůǎɏɔɢɞɜ ǗŰǎ ɔɘŬ Ǘďɜ Ůǎǚɞђ ǗďǗƳ Ǘǎgģ ɚђɔɤ Ǘďģ ´ɞɚg´ɚďďɞɨ ģ ŮǎǗŮɟ ɞɐģ ɢɚɤ ɟɑǚŬģ.

¢ gɣďɚɐ Ů ɑ Ǘɤ ůď *Ǻ´* ůǗŰ ´Ŭǎǚɘ, ɏɜŬ ´ɚďďgůɛђ ɛŮgɔŮǎɜɞɛɞƳ Ůģ ´ŬďŮǎģ ůgɛ´ Ůɟɘǖɞɟɏģ ɚŬǎ ůgɢɜɏģ ǚɘƳɟɟɞɘŮģ Ŭ ђ ɔŬůǗɟ ŮǎǗɟ ďǎǚŬ, Ŭ ɞǗŮǎŮɑɏǚŮǎɞď ɚɞ´ɟŬǎɞ-ůǗǎɛŬǗǎɞɐģ ɛŮǗƳǚɞůďģ Ǘǎg ɛɞɟɞɓɶɞg [502-506]. ɟ gǗђ ɏɢŮǎ ɛŮǎŬǎɨǗŮɟď ůďɛŬůďŬ ůǗǎģ ŬǎŬ ǗgůůђɛŮǎŮģ ɢɩ ɟŮģ ђ´ɞg ɞɘ ǚɘƳɟɟɞɘŮģ´Ŭg ɜɞgɜ ůgɢɜƳǗď ɛɞɟǘɐ Ůɘǚďɛ ďŬģ. ȳ ɛɤ ģ, ď ɞɜŮŬ ɚɞœ ɤ ɜď Ŭ ђ *Ǻ´*, Ůǎ ŬǎǗǎďɏůŮǎɛŮ Ƴɚɚ Ŭ ɔɜɤ ůǗƳ ´Ŭďɞɔђɜ Ŭ Ǘɞg ɔŬůǗɟ ŮǎǗɟɞɨ ůgůǗɛŬǗǎģ (´.ɢ. ůŬǎɛɞɜɏɚŬ, *E.coli*) ǚŮǎ ůgɜɞǚŮɨ ǗǗŬ Ŭ ђ ǚɘƳɟɟɞɘŬ ɛŮǗďɜ ɞ´ɞďŬ ǚɘŬǘ´Ůɟ ǗǗŬɞ ´Ŭďɞɔђɜɞģ ɛɞɟɞɟɔŬɘůɛђģ.

***Ǝǖɛ ŬǗǎ-ůǗǎɛŬǗǎɐ ɛŮǗƳǚɞůď*:** ȯ ɚɚď ´ɘďŬǎɐ ɞǚђģ Ůǎђǚɞg Ǘǎg *Ǻ´* Ŭ ђ Ǘɜ ůǗђɛŬɢɞ ´ɟɞģ Ǘǎ ´Ůɘɓ Ƴɚɚɞɜ ŮǎŬǎ ǚɘŬ Ǘǎg ɞɘůɞǘƳɔɞg ɚŬǎ Ǘďģ ůǗǎɛŬǗǎɐģ ɚɞɚђǗďǗŰģ [346]. ¢ Ŭ ɞɛђɜɤ ůď ɛɞɟɞɓɶɞg ůŮ ǚŮǎɛŬǗǗ ɔŬůǗɟɞɨ gɔɟɞɨ, ď ŬǎŬɜɩ ɟɘɐ Ǘǎg ůǗǎ ɚŬǗ ǗŮɞ ɞɘůɞǘƳɔɞ ůŮ ´Ůɘ´Ǘ ůǎģ ɔŬůǗɟ ɞɞɘůɞǘŬɞɐģ ´Ŭǎɞǚɟђɛďůďģ ɚŬɞ Ŭ ɞɞɘůɛђģ Ǘǎg ɚgɚɞǚɟɞɨ Ů ɘďďɚœɞg ɛŮ *Ǻ´* ůŮ ŬǎďŮǎŮǎģ ɛŮ ɞɘůɞǘƳɔɞ Barrett, Ŭ ɞǗŮǎɛɞɨɜ Ŭ ђǚŮǎɛď ђǗǎǗǎ ´Ŭɞɚǚɟɞɛɞɨɜgɔɟђ ɛŮǗǗɏɟŮǎ ɛɞɟђɓɘŬ ´Ƴɜɤ Ŭ ђ Ǘɜ ɚǗǗ ǗǗɞ ɞɘůɞǘŬɞђ ůǘɞɚǗɟŬ [507;508]. ɟ gǗђ ɛ´ɞɟŮǎɜŬ ůgɛɓŬǎŮǎ ɚŬǎ ůǗŰ «ǘgůɝɚɞɔɞƳ» ɛŮǗŬǎgɛŬǗǎƳ Ů ǎůђǚɘŬ, ɞ´ђǗŮ ɚŬǎ Ǘǎ ɛɞɚgůɛɏɜɞ ɛŮ *Ǻ´* ɔŬǎǗɟɞђ ´Ůɘŝђɛ Ůǎɞ ɛ´ɞɟŮǎɜŬ Ů ɝɞɚɨ ɜŮǎ, ɛŮǗď ůŮǎɟƳ Ǘǎg Ǘď ůǗǎɛŬǗǎɐ ɚɞɚђǗďǗŰ ɚŬǎ Ǘǎģ Ůǎɚɟɑ Ůǎģ Ǘďģ. Ǻ´ɑůďģ, Ǘǎ ɛɞɟђɓɝ ɛ´ɞɟŮǎɜŬ ɛŮǗǗɞďŮǎůŮƳɚɚŬ ƳǗǎɛŬ ɚŬǎ ɘǚɘŬǗǗɟ Ŭ ɛŮǗŬǎɨ Ǘɤ ɜ ´Ŭǚɘ ɜ ´ɞg ´Ůɟɞgůɏɛɞgɜ ůgɢɜƳŮ ŮǎђǚɘŬɔŬǎɟɞɞɘůɞǘŬɞɐģ´Ŭɚɞǚɟђɛďůďģ.

ƎŮ Ůɟ ɚǗɏģ ɛŮǎɏǗǗģ ɏɔɞŮ ´ɟɞ´ƳďŮǎ ɚŬǎɚɏɟɔŬǎģ ɐ ŬǎɢɜŮģůďģ ɛŮ PCR Ǘǎg *Ǻ´* ůǗďɜ ůǗǎɛŬǗǎɐ ɚɞɚђǗďǗŰ ɛŮ ŮǎŬɟǗǎƳ ŬǎǗǚǗǎƳ Ŭ ɞǗŮǎɏůɛŬǗǗ (**ɄœŬǎǗģ 10-11**) [509-511]. ɸŮǎ ŮǎŬǎůǗɏɜŬ ɞɘǚɘǗɞɟɏģ ŬģǗɏģ ɞǘŮǎɞɜǗǎ ůǗgģ ǗǗɟ ɞɔŮǎŮǎģ ´ɚďďgůɛɞɨ ģ, ůǗģ ǚɘǗɞɟŮǎɏģ ɛŮǗђǚɞgģ ɚɐɣďģ Ǘɤ ɜ ǚŮǎɛƳǗɤ ɜ ɐ ůǗďɜ ´ɞɞɚŬ Ǘɤ ɜ ŮɟɔŬǗďɘŬɩ ɜ ǗǗɜɞɩ ɜ ´ɞg ɢɟ ďůɝɞ´ɞɝďďɚŬ.

Ʉɞɚɚɞɑ ůgɔɔɟǗɘŮģ ďŮɤ ɟɞɨ ɜ Ǘď ůǗǎɛŬǗǎɐ ɚɞɚђǗďǗŰ ůŬ Ǘď ǚŮǎɟǗɟď ůŮ ů´ɞgǚŬǎђǗďǗŰ ǘgůɞɐ ´ďɔɐ Ǘǎg *Ǻ´*, ´ɞg Ůǎђģ Ŭ ђ Ǘďɜ ɛŮǗƳǚɞůď ŮǎŬ g´Ŭǎ ďgɜď ɚŬǎɔɞǗǎģ g´ɞɟɞ´ɏģ Ǘǎg ɛɞɟɞɓɶɞg ɛŮƳ ďŮɟŬǎǗ ŮŮǎŬɟœɤ ůďģ [512-515]. ɟ ɜ ɚŬǎ Ǘǎ ɛɞɟђɓɝ ɏɢŮǎ Ŭ ɞɛɞɜɤ ďŮǎ, ɛŮ *in situ* gɓɟɘǚŮǎɛђ Ŭ ђ ůǗǎɛŬǗǎɐƳ ɏɚɚď (ɛŮƳ Ŭ ђ CMV ɚɞœɤ ɜď), ď ´Ůɟɞgůŭ Ǘǎg ůǗď ůǗǎɛŬǗǎɐ ɚɞɚђǗďǗŰ ǚŮǎ ůgɜǚɏǗǗŬ ɛŮ ɚŬɛɞƳ Ůǎǚɐ ůǗǎɛŬǗǎɐ ɜђůɞ ɞɨ ǗŰ ůɢǗǗɛŮǗǗŬ ɛŮ Ǘǎ Ů ɑ Ůǎɞ gɔɚŮǎɐɛģ Ǘǎg ůǗђɛŬǗǎģ, Ǘǎ ɜ ɓŬǎɛђ ´Ůɝǚɞɜ ǗǗǚǚǗŬǎ Ŭǎɚɏ ɚŬǎ Ǘǎģ ŮǎŬǎ ɞďɏůǗǎģ Ǘďģ ɞǚɞɜǗǎɐģ ´ɚƳɚŬǎģ [516]. ¢ ǚgůɚɞɚǚ ɚŬǎɚɏɟɔŬǎģ Ǘǎg *Ǻ´* Ŭ ђ Ǘďɜ ůǗǎɛŬǗǎɐ ɚɞɚђǗďǗŰ, ůŮ ůɢɏůď ɛŮǗǗ Ŭ ɞǗŮǎɏůɛŬǗǗ Ǘďģ PCR, ŮǎŬǎ ´ɘďŬǎђ ɜŬ ɞǚŮǎɛǗǗŬ ůǗɜ ´ɞɨ ɢŬɛďɚђ Ŭ ɞɞɘůɛђ, ůǗďɜ ɨ´Ůɟɜď

[illegible] [517].

[illegible] [518-520]. [illegible] PCR [illegible] [521;522]. [illegible] PCR [523;524]. [illegible]

[illegible] [525;526].

[illegible] *Epstein-Barr* [illegible] [527;528]. [illegible] [529-531].

Ịịɔɑɛɦɠ	***Ƙ´*** (+)	Ɛi ɜɛəɜɛ ŭŮɒɛƳŮŕɜ	Ʉɟɛyə-Ůgůɑɖ	Ƙəəɜɑɖ[Ůɣɠ
ɄŮɟɜ´Ůí ůŮŕɜ	ŭŮɒɛŬŰŰə/Ŭ(%)	PCR (%)		(Primers)
16	1/16 (6.3%)	A	Ɛdɒɛɠ	-
71	1/71 (1,4%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ	-
	0/71 (0%)		Ɛdɒɛɠ	
81	12/81 (14,8%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ	-
	0/81 (0%)		Ɛdɒɛɠ	
94	0/94 (0%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ&	-
			ůdɒɛɠ	
52	0/52 (0%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ&	-
			ůdɒɛɠ	
31	1/31 (3,2%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ	-
21	0/21 (0%)	ɹ	ƁŭɛɜŰ´ə-ƳəŬ	-
	1/21 (4,8%)		Ɓŭɛɜ/ůŰɛɜɑdůɠ	
54	0/54 (0%)	39/54 (72,2%)	ƁŭɛɜŰ´ə-ƳəŬ	urease A
15	0/15 (0%)	0/15 (0%)	ƁŭɛɜŰ´ə-ƳəŬ	urease C
62	0/62 (0%)	1/62 (1/6%)	ƁŭɛɜŰ´ə-ƳəŬ	16SrRNA
**15	2/15 (13.3%)	3/15 (20%)	ƐŰɛ.əɛɜəɛŰ	16SrRNA
6	A	5/6 (83.3%)	ƁŭɛɜŰ´ə-ƳəŬ	26KDa p
25	A	7/25 (28%)	OŭɛɜŰ´ə-ƳəŬ	16SrRNA
29	A	8/29 (27.6%)	ƁŭɛɜŰ´ə-ƳəŬ	Urese A
21	A	5/21 (2/21%)	ƁŭɛɜŰ´ə-ƳəŬ&	16SrRNA
			ůdɒɛɠ	
14	ɹ	0/14 (0%)	ƁŭɛɜŰ´ə-ƳəŬ	16SrRNA
68	A	56/68 (82/4%)	Ɛdɒɛɠ	0.86KbDNA
56	A	33/56 (58/9%)	Ɛdɒɛɠ	1.86KbDNA
27	A	9/27 (33.3%)	Ɛdɒɛɠ	26KDa p
103	A	25/103 (24.3%)	Ɛdɒɛɠ	Urease A

ƬɑɑŬəŬɠ 10. ɹ) ɹ ɜɑɛɜŮgůɑɖ Ůɛg ***Ƙ´*** ɛŮəŬɒəəɣɟɔŮɵŬ (ə/Ŭ) əŬɔ PCR ůŰ[ɜ ůŰɛɛŬŰɛɒɐ əɛəɵɦ]Ůɖ[ŰŰ ŭgů´Ů Ůɛɒɪ ɜ ŬůdŮɜɪ ɜ*

40	40/40 (100%)	J	Bŭœ3Ű´ə¥əŭ	-
170	12/170 (7,1%)	J	Bŭœ3Ű´ə¥əŭ	-
55	0/55 (0%)	J	Bŭœ3Ű´ə¥əŭ	-
19	0/19 (0%)	11/19 (57,9%)	Bŭœ3Ű´ə¥əŭ	Urease A
336	A	0/336 (0%)	Bŭœ3Ű´ə¥əŭ	Urease A
124	A	2/124 (1/6%)	Bŭœ3Ű´ə¥əŭ	Urease A
		12/124 (9/8%)	& ůdЭœg	26KDa p

Ŧœ3Ŭə Ŭg 11. d) J 3œ3Ůgůd Ű£g ***A´*** ɛŮəŬəəyɟɔŮ3Ŭ (ə/Ŭ) əŬə PCR ůŰ[3 ůŰ£ɛŰŰəɒɐ əœəɦŰ[ŰŰ Ŭůgɛ´Ű¥ɛŰŰə1 3 ŬŰɦɛ¥3*

A´ Ů£d ɔɐůŮg:

J : Ŭ œgůdŬ, 26KDA p : ɔɦ3œg´ɟ¥ ŰŰ£3dg 26KDa, 0.86 KbDNA : əə¥ůɛŬDNA, 0,86 Kbase,

*əŰŰ¥əŬ3ɦ3Ŭ***A´** (+) ůŰ[b3œɣdŬůŰ£ɛ¥Gœg

**ə/Ŭ(+) : ůdЭœg, g´Ů¡ı Ŭ, ɔə1 ůůŬ, œŭœ3Ű3ɒɐ ´ə¥əŬï PCR(+) : ůdЭœg, g´Ů¡ı Ŭ, ´Ů¡Ů5¥

ũŬůŰ¡ɵ-ůŰ£ɛŰŰəɒɐ ɛŮŰ¥ŭœůd*:** Ŧ ŬəŬɦŰŰ¡Ůg ´Ů¡ŬŰ[¡ɐůŮg ´œg ´Ů¡3ɒ¡¥Ű¡œg3 ə¡důŮg Ůɐũd£3ɒɐgɔŬůŰ¡dŰũŬg əŬə g´œGə1¡gũ¡dŬg ɛŰŰ¥Ű[ɕ¡ɐůd ɛd Ŭ œůŰŰɦ1¡ɛy3ı3 əŬdŮŰ£¡ı3 pHï ɛŮŰ¡dŬg əŬə ´¡ɦůűŬŰŰg ´Ů¡3ɒ¡Ű¡¥g ¥ɛŮdg ɛŮŰ¥ŭœůdg Ű£g ***A´ ɛ¥ůı Ŭ3Ů Ů¡əı g Ŭ œůŰŰɦ1¡ɛy3ı3 ɔŰůŰ¡œůəg´ɑı3, ŭŮɑ3œg3 ɛŰŰ¥ŭœůd Ű£g ɛɒ¡œbɑœg ɛŮŰɦgɔŰůŰ¡ɒɐyg Ůəə¡důŮg. J gŰ£i Ű£g Ű¡´œg d ɛŰŰ¥ŭœůd, ŭdəŬŭɐ d ¥ɛŮůd Ů Ŭű1ɐ ɛŮŰɦgɔŰůŰ¡ɒɐyg Ůəə¡důŮg, Ůɑ3Ŭə ɛ¥əəœ3 Ŭ œŰŮəůɛŰŰəɦŰŰ¡d Ŭ ɦ Ű[ɛŰŰ¥ŭœůd ɛŮŰ ɔɐ ůŰ£ɛŰŰ£-ůŰ£ɛŰŰəɒɐ Ů Ŭű1ɐ. Ł£ôŬgŰɦ ůg3dɔœ¡œi3 əŬə œ9ɛŮəɒyŰŰgŬ œɒəůɛœi ɛŮ***A´*** ŰdŮəœ3Ű¡ 3, œ9é´œɑɒ9ɛœəi3ddəŬ3 Ŭű1œi ɣəŬbŬ3 Ŭ ɦ Ű£ ůŰɦɛŬ əŬɔəɒɣɟɔŮ3Ůg Ű£g ɛɒ¡œbɑœg əŬə ɛɦ3œ ɛŰŰ¥ ɔɐɣd ɛŮ¥əddg ´œůɦŰ[Ű£g Ŭ3Ű£3ɑœ¥3 űŬ¡ɛ¥ə¥3. J 3ŰdŮŰŰ, ¥ɛŮůd ɐŰŰ3 d ɛŰŰ¥ŭœůd Ű£g ***A´*** ůŮ***ɔœŮŰɦ*** ´œg ´¡ɦůűŬ¡ŮŬ3¥3dɣd ůŰɦɛŬɛŮůŰɦɛŬůŮ ŬůdŮɔɐ ɛŮ´¡ɦůűŬŰ£ ɣɛŰ£ əŬə ɛœəi3ddəŮɛŮůŰɣəŰ£œg Ű£g ɛɒ¡œbɑœg ´œg Ůı Ŭ£ŮɛŬůŰɦɛŬůŮ ŬůdŮɔɐg. ū ŬɑŮŰŰɔ əœé ɦ3 ɦŰə Ű£ ***A´*** ´œg Ŭ œəŰ¥ŰŰɔ ¥ɛŮůŬ Ŭ ɦ Ű£g ɔŰůŰ¡ɒɐyg Ůəə¡důŮg Ůəűɟ¥ɛŮə ɣ3Ŭ3 ´Ů¡ůůɦŰŰ¡ɛ əœɛœŰ£3əɦ űŬɑɦŰg´ɛ ɛŮŰ[3 bœɐdŮŰ Ű£g œ´œɑg Ŭ œɒɑŮə Ůəœ3Ŭ Ű£3 3¥œ 3Ů3ůŰɐ.

¢ g´ɦdŮůd Ű[g ɔŰůŰ¡ɛ-ůŰ£ɛŰŰəɒɐg ɛŰŰ¥ŭœůdg Ű£g ***A´*** ŰŰɟɒ¥ɛŮə Ů¡əŰŰ¥ ɛŮ ŰŰ Ůɛ¤d£ɛœəœɔɒ¥ŭŮœɛɣ3Ŭ J ´œŰdŮŰŰɔɦŰə d ɔŰůŰ¡ɛ-ůŰ£ɛŰŰəɒɐ ɛŰŰ¥ŭœůdg ůgɛbŰɑŮə ůgɑ3¥ůŰŰ ´Ůəű¥´œg Ůɑ3Ůə, ɤgɔ3ɤůŰɦ3, Ů9ɟɟŮɐ ůŮŮ Ůəůɦŭ9ŬŮɛɣŰ3. Ɓ9¥ɛŰŰ£9Ű¡g Ű£ɑŮɑ3Ůə bəŮə3ı ŭŮ¡g

[illegible] Osler [illegible] [532-534]. [illegible] [535;536].

[illegible] [33;537].

[illegible] [538;539]. [illegible] [432;540].

Ɛ₮₿⊎₿Ɛ¢¢Ɛ₳Λũȷ ƐŁȷ Ɛ

¢ əəʚɜəɐ ´ɛȷ ůđŰŰı ɜɛůqɛɛ ŸŰı ɜ ůŰŰɛ´ɛdŰůgɛɛ ŰŰɣɢůɜŰůŰŁ´ŰdɛɔůɜůŰŁəŸŰŁ **₳´** ůɜŰȷ ŰŸŰŰɜ Ű ɦ´ɛɜəœɛggƒ´ŰȷŸɔɛɜŰŰgƒ ɦ´ɤgƒɛ ɔɛɜɦŰg´ɛgƒŰŁg ɛɜəȷɛɛȷɔŰɜůɛɛi, q Ůɜɛůɛəɛɔɜəɐ Ű Ÿɜ Ůqůđ ŰŁg ɜůɜůŰɐ, əŰđı gƒəŰɔ Ÿəəůgƒ ɔůɜůŰŁəɣgƒ əŰɔ ´ŰȷŁɓŰɔəɛɜŰŁəɣgƒ Ůƨűȷ Ÿůůgƒ. ¢Ű ůŰůıɛɛɣɜŰ ŰgŰŸ ɣɢɛgɜ ɛŭđɔɐůůɔůŰq ůŰŁɜ ŰɜŸɔəq ɔɜŰůəȷœɤůɐ ŰŁg ɛŮůŰɦɢɛ ŰŁɜ Ůəə Ůɔɐ Űqgƒűgůɜɐgƒ´ɛȷ ůđŰgƒ Ůɤɜ ɜɛůqɛŸŰɤɜ ŰgŰɪɜ. ₳ɛ´ɦŭɜŰ Ű ɛŰŰɔəɛi ɜ ŭɜŸŭɛȷ ůgƒ ɔůɜŰŁəɣgƒ Ůɔəəɛɜ ůůgƒ ůŰŁ ɔɛɜɜűœɤɛŰ ŰŁg ɛɜəȷɛɓœg, ´ɛg ŰŁ əŰđƨůŰŁi ɜ ŮɜđůɔůŰəɦ ůŮɛđŰůůgȷŸđŰȷŰ ůgŰŁəı ɜ ůɢqɛŸŰɤɜ ɛŮůgɔəɔɔȷɛɣɜŰ ŮɜŰŁɓɜɛŰŁəŸůəůgŸůɛŰŰŰ. Bɘ Ůɔəəɛɜ ůůgƒ Ű ŭɛȷɛi ɜ əŰŰŸəiȷɛɜ əɦɔɛ ůŮůqɛɔůɔɔɣgƒ ɛŰŰɔəŸɜůgƒ ůŰŁɜ Ůɔəi əqŰŁgƒ´ŮŰŁűgəɛŰȷŰɜůúŰȷŸůqqƒŰŁg 23S rRNA ɐ Ÿəəůgƒ ɛŰŰɔəŸɜůgƒůŮŭŰŁɛȷŰŁəɣgƒ ´ŰȷɜɛɢɣgƒŰŁg ɔɛɜƨűɜ ɛŰŰɦgƒŰŁg.

Ɛəɛ´ɦgƒ ŰŁgƒŰȷɔŰůqŰgƒŰgŰŁgƒɐŰŰɜ q ɛŮəɣŰŁq Ű ɤɜ ɔůɜŰŁəı ɜ ŰgŰɪɜ Ůɔəəɛɜ ůŮɤɜ ůŮɓɜ´Űəɦgəəɦ ůŮəȷŸgƒ ŰůqŮɜı ɜ ɛŮ ***₳əəɐɛbŮəŰŁȷƨŭɜŮəɐ*** əɛœɤɜqəŰəq ůgůɢɣŰŁůɐ ŰŁggƒɛŮɜůŰŁəɛɔəɣgƒ Ůəəɛɜ ůŮəgƒ.

ƐgɔəŭəȷɛɣɜŰɛŮəŭŰŁđqəŰɜ ɛɜɛŰŰŮəəŸɜŭəgƒ A2142G, A2142C əŰɔ A2143G ŰŁg 23S rRNA ŰŁg ***₳´***, ´ɛg ɣɢɛgɜ ɤgƒ ŰɛŰȷəŭůɛŰ ŰŁɜ ɣəűȷŰůq ŰɜđŭəŰŁəɦŰŁŰŰƒ ŰŁg ɓŰɔŰŁȷœg ůŰŁɜ Ɛəŭȷɛɛgəœq, ɛɜŰɛŰɔȷɛɛgəœűq - əiȷɛɜ ůgůŰŰŁəɦ ŰŁg dŰȷŰ ŮgŰŁəɛi ůɢɛɛŰŰŁgƒ. Ɛ ŰŁq ůg ɜɣɢŭəŰ, ɛɜɔŭɜŰŁəɣgƒ Ůəəɛɜ ůŮəgƒ ůgůɢŰŰůđqəŰɜ ɛŮűŰɜɛŰŁ´əɣgƒ Ůəəŭɔɣgƒ ŰŁg ɔŰůŰȷɛɜɛi ɓəŭɜɜɛɔɦɜɛg, ɦ´ɤgƒ ŰgŰŁȷgƒŰŰɜəɛɛi ɜŰŰəəůŰŁ´ŰđɛəɛɔəŸəŰŰŸ Sydney (Űȷɛ´ɛ´ɛœqůq Houston) əŰđı gƒəŰɔɛŮ ŸəəŭŰůqɛɛɔȷŰŰíəŸůůŰɛɛɣɜŰ, ´ȷɛəŭɛɣɜɛg ɜŰŰɜŰəđqƨi ɜ ´əqȷɛűɛȷdŮƒɔəŭŰŁq ɜűəŭŰŁŰȷq űi ůq əŰɔůgɛ´ŰȷɜűɛȷŸŰŁg ɛɜəȷɛɛȷɔŰɜůɛɛi ŰgŰŁi.

Æ Ł ę Ł Ź Ƀ ɀ Æ Λ Ƀ Ł Ć

1. Ĵ ǝǝ Ÿ ǝ Ŭǝ ǫ ɏdɞǖɕɘ

Ǻ´ ǝǝɕɔɐ ǖǓǝɛ ŸǗ ɜ

¢ ɛǓǝɏǗ ´ɟŬɔɛŬǗ´ɕɐɗɖǝŮůŮ 75 ůɡɜɕǝǝ Ÿ ŬůɗǓǓɠ ǗɠũŬůǗǓǗɕǝɕɔǝɐɠ Ʈǝǝǝɐɠ Ǘɠ ʔɕůɕǝɕɛǓɕɡ ʔƗɀ ɇƗ, ´ɕɡ ɢɤɟɷɖɖǝŬ ůŮǚɨɕ ɕɛŸũǓɠ. ¢ ´ɟɩ Ǘɕɛ ŸũŬŬ ɕǗǓǝɕɨɜǗǓŬ ɧ 25 ŬůɗǓǓɠ ɛŮ ***Ǻǝǝɕɓ Ŭǝ Ǘɟ ɑǝ Ŭɐ*** ɔŬůǗɗǗũŬ, ǚǝŬɔɜɤ ůɛɏɜɖ ɤɠ ŬɗǓǗɐ ůǗɜ Ʈǝ Ǘɟ ɗɟɕɛɡǝɕɖ ɛǗŸ Ŭ ɧ ǚŮ Ǘɟ ɖ ɓǝɣɗŬ ůǗ Ǘɏǝɕɠ Ǘɠ ɗǗ Ŭ ǓɡǗɐɠ Ŭɔɤ ɔɐɠ ǝŬǝ ɖ ǚŮ Ǘɟ ɖ ɕɛŸũŬ Ŭ ɕǗǓǝɕɨɜǗǓŬ ɧ 50 ŬůɗǓǓɠ Ů ɷɖɠ ɛŮ ***Ǻǝǝɕɓ Ŭǝ Ǘɟ ɑǝ Ŭɐ*** ɔŬůǗɗǗũŬ ůǗɕɡɠ ɕ´ɕɕɡɠ ɏɔǝŮŮ ǝǗɢɖɛɏɜɖ ɗǗ Ŭ ŮǗŬ Ǔǝɟɕɤ ůɖɠ Ǘɠ ɛǝɟɕɕɟɔŬǝůɛɕɨ ǝŬǝɖ ɕ´ɕɗŬŮ ɷɖɠ Ů ǝŮɓŬǝ ɖɖǝŮ ɓǝ´ ǗǝŸɛǗŸǗ Ǘɏǝɕɠ Ǘɠ ɗǗ Ŭ ŮŬɠ.

ɇŬ ɡǝǝ Ÿ Ǘɠ ɛǓǝɏǗɠ ´ɟɕɏɟ ɢɕɜǗǓ Ŭ ɧ Ǘ Ǘɟ ɢǓɕ/ɓŸůɖ ǚǗɕɛɏɜɤɜ ǚǓɔɛ ŸǗ ɜ ŬůɗǓɩ ɜ Ǘɡ ɄŬɗɕǝɕɔɕŬŬǗɛǝɕɨ Ǻɟɔ ŬůǗɟɕɡ Ǘɡ ʔƗɀ ɇƗ ɧ´ɤɠ ŬɡǗŸ ǝŬǗŬɟ Ÿũɖǝ Ŭ ůǗ LIS (Laboratory Information System) Ǘɡ ʔɕůɕǝɕɛǓɕɡ ǝŬ Ŭ ɕǗǓǝɕɨɜǗǓ Ŭ ɕǝǝǓůǗǝŸ Ŭ ɧ ɓǝɣɗǓɠ ɛɕɜǝɕ´ɕɖɛɏɜǓɠ ůŮ 10% ɟɡɗɛǝůǗǝɧ ǚǝŸǝɡɛŬ ǘɕɟɛɧǝɖɠ (buffered formalin) ǝŬ Ǔǝǝ ǓůɛɏɜǓɠ ůŮǝɨ ɓɕɡɠ´ Ǘɟ ŬǘɕɖɠŬǘɕɟɕɨ ůŬ ǚŮǗ ɢɟɕɜǝɧ ǚǝŸůǗɛŬ 2005-2010.

Ƀ Ǘɟǝɗɛɧɠ Ǘɤ ɜ ǚǓɔɛ ŸǗ ɜ ´Ǘɟǝ Ǔǝ Ÿɛ ɓŬŮ 150 ůɡɜɕǝǝ Ÿ ǝɨ ɓɕɡɠ´ Ǘɟ Ŭǘɕɖɠ. 50 Ŭ ɧ Ǘɡɠ ŬůɗǓǓɠ Ǘɠ´ɟɩ Ǘɠ ɕɛ ŸũŬɠ ǝŬ 100 ǝɨ ɓɕɡɠ´ Ǘɟ Ŭǘɕɖɠ Ŭ ɧ Ǘɡɠ ŬůɗǓǓɠ Ǘɠ ǚŮ Ǘɟ ɖɠ ɕɛ ŸũŬɠ.

ɟ´ɧ ǝŸɗŮ ǝɨ ɓɕ ´Ǘɟ Ŭǘɕɖɠ ǝɧ´ɖǝŬ ɛŮ ɛǝɟɕǗɧɛɕ Leica, Ǘ´ɕɡ RM2255, ǗǓɠ Ǘɛɏɠ ´Ÿɢɕɡɠ 2 ɛm ɖ ǝŬɗǓɛɗŬɔǝŬɢɟɩ ůɖ ɛŮ

- ɟ ɐŬǗɜɡǝɕɖ ǝŬ Ǻɤ ůɕɖ ɔǝŬ ůǗǝɕɔɐ Ǔ Ǘɛ ɖůɖ,
- Ƚ ůǗɢɖɛǝɐ ɢɟɩ ůɖ Giemsa ɔǝŬ ŬŬɜɩ ɟǝůɖ Ǘɤ ɜ ɛǝɟɕɕɟɔŬǝůɛɩ ɜ (ɛŮ ǝɡŬɧ ɢɟɩ ɛŬ) ǝŬɗɩ ɠ ǝŬ
- ɨ ɟɩ ůɖ High Iron Diamine (HID) ɔǝŬ ǓǗ´ǝůɛɧ/ɢǗɟŬǝǗɟǝůɛɧ Ǘɠ ǓǗǗɟǝɐɠ ɛǗŬ ǝŬůɗŬɠ.

Ɇǘɗ ůɡɜɏɢǓǝŬ, Ŭ ɧ ǝŸɗŮ ɡǝǝɧ ǝɧ´ɖǝŬ Ǘɛɏɠ ´Ÿɢɕɡɠ 5-10ɛm (ŬŸǝɕɔŬ ǝŬ ɛŮ Ǘɜ ǚǝŬɗɏůɐɖ ´ɕůɧǗɖǗ) ɔǝŬ Ǘɜ ŬŬɤɔɐ ɔŬǗǝɕɨ ɡǝǝɕɨ ǝŬ ǓǗɏǝŬůɖ Ǘɠ Ǘɢɜǝɐɠ RT-PCR, ɧ´ɤɠ ŬŬǘɏɟ ǗŬǝ ´Ǘɟ ŬǝŸǗ, ɛŮůǝɕ´ɧ Ǘɜ ´ɟɕůǚɐɟǝůɛɧ Ǘɧůɕ Ǘɠ ŬǓɟ Ǘɖɠ/ ŬɗǓǗǝɧ Ǘɠ ɛǗŬǝŬɛɏɜɕɡ-Ŭɛ ǗŸǝŬɢǗɡ (wild type) ***Ǻǝǝɕɓ Ŭǝ Ǘɟ ɑǝ Ŭɕɨ*** ůǗǝɏɢɕɡɠ, ɧůɕ ǝŬ Ǘɡ ɛǝɟɕɓǝŬɕɨ ǘɕɟǗɕɡ.

[illegible]

[illegible] 13 [illegible] 12 [illegible] 65 [illegible] 26 [illegible] 24 [illegible] 61 [illegible] 39 [illegible] 36 [illegible].

	[illegible]	%	[illegible] %	[illegible] %
[illegible] (X2 [illegible])	78 (39 [illegible] 2)	52.3	52.7	52.7
[illegible] (X2 [illegible])	72 (36 [illegible] 2)	47.0	47.3	100.0
[illegible]	150	99.3	100.0	100.0

[illegible] 12. [illegible]

[illegible] 3-5 [illegible], [illegible] ([illegible]).

		[illegible]	%	[illegible] %	[illegible] %
	[illegible]	71	47.0	47.7	47.7
	[illegible]	2	1.3	1.3	49.0
	[illegible]	48	31.8	32.2	81.2
	[illegible]	4	2.6	2.7	83.9
	[illegible]	3	2.0	2.0	85.9
	[illegible]	14	9.3	9.4	95.3
	[illegible]	5	3.3	3.4	98.7
	[illegible]	2	1.3	1.3	100.0
	[illegible]	150	98.7	100.0	

[illegible] 13. [illegible]

[illegible] LIS [illegible] ([illegible]) [illegible] ([illegible]). [illegible] (PPis) [illegible].

ĿủŰĕǝɞɔɷ Ÿ-ɛɞɟ ɘǕɑ Ÿ ŭŮŭɞɛɏɜǓ ǕůďǕɩ ɜ

¢ ůŰǕŭɞ´ɞɑďůɖ Űɖɠ ɔǕůǗ ɖŰŭǓɠ Űɤɜ Ǖůďǖɩ ɜ Űɖɠ ɛǕɞɏŰɖɠ ɏɔɞɜŮ ɛŮ Űɛ ůɨ ůŰɖɛǓ Sydney Ǘɞ´ɞ´ɞɖɛɏɜɞ ɚǕŰŸ Houston (1994), ɧ´ɤɠ ŭŰɞŮŰǕɚǕɑ ůŰɛɜ **ɄɶǕɑǓ 31**. Ɇɞ ůɨ ůŰɖɛǓ Sydney ŭɶǕɑ ɏɛŭǕůɖ ůŰɖ ů´ɞɡŭǕɧŰɖŰǕ Űɖɠ Űɛ´ɞɔɟǕŭďǕɠ, Űɖɠ ɛɞɟŭɞǝɞɔďǕɠ ɚǕɑ Űɖɠ ǕɑŰɛǝɞɔɷɐɠ ´ǝɖɟɞŭɞɟďǕɠ Űɖɠ ɔǕůǗ ɖŰŭǓɠ. ȾǕɑ ɞɘ ŭɨɞ ɞɛŸŭůɠ Ǖůďǖɩ ɜ (´ɟɞ ɚǕɑ ɛŮŸ Űɖ ďǗǓ ůǕ) ɛǕŮɖďɖɚǕɜ ɛŮŰɖɜ ɑɘǓ Ǖɑɟɧɩ ɠɛŮɞŭɞǝɞɔǓ.

Ƀɘ´ǝɖɟɞŭɞɟďǕɠ´ɞɡ ´ɟɞɏɚɡɣǕɜ ɚǕŰɞɤɟɐďɖɚǕɜ ůŮǗɟɞǕɶ Ů ǕǗɔǕůďǕɠ ŭŮɞɛɏɜɤɜ (SPSS Statistics Data Editor V.19), ɛŮ Ǘɘɛɖ ɛɖŰɑɐ ɚɤŭɷɞ´ɞɑďůɖ, ɩ ůŰǓ ɜǓ ɛɖɜ Ǖ ɞɚǕɨ´ŰɛɜǕɑ ůŰɛɞŮǓ´ɟɞůɤ´ɷɩ ɜ ŭŮɞɛɏɜɤɜ Űɤɜ Ǖůďǖɩ ɜ. Ƀ Ǘɘɛɖɧɠ Űɤɜ ɏɷɣɑ ɜ ´ɞɡ Ǖɑɐŭďɖůǖɜ Ǔ ɧ Űɛ ŸɜǗɞ-ɛŮŰǕɏǕɑɐ ɕɩ ɜɖ-ůɩ ɛǓ, ɔɤɜɖǓ, ɚǗŭďǓ ɚǕɑ ďɧǝɞ ůŰɛŸɞɡ ɚɟɑďɖɚǕɜ Ů ǗɚǗɠ ɔɘǓ Űɖ ɛǕɏŰɖ ůŰɛ ůɨ ɜɞǝɞ ůɞŰɧɜ Űɤɜ ´ǗɠŰ ůǕɤɜ (3-5 ɘůŰɛŰɛǕɞɑɘǓ/ǕɑŸ Ǖůďǖɑ).

ɆŰɖ ůŰǕŭɞ´ɞɑďůɖ ɚǕŸ Sydney ɓǕɖɛɞɜɞɛɐďɖɚǕɜ ɖ ɟɧɜɘǓ ŭǝǕɛɞɜɐ, ɖ ǕǗɔɧŰɖŰǕ Űɖɠ ɔǕůǗ ɖŰŭǓɠ, ɖ ǓǗɞŭďǓ, ɖ ǕŰǗɷɐ ɛŮǓ ǝǕůďǓ ɚǕɑ ɞ Ǔ ɞɷɘůɛɧɠ/´ɞůɞŰɷɞ´ɞɑďůɖ Űɞɡ **Ⱥ´** ůŰɜ ɘůŰɛǝɞɔɷɐ Űɛɐ ɛŮŸ Ǔ ɧ ɟɩ ůɖ Giemsa. ȺɚŰǕɐɠ ǕǓŭɞɟ Ÿ Űɞɡ Ǘɧ´ɞɡ ɚǕɑ Űɖɠ Ǖɷɚǝɧɔɖůɖɠ Űɤɜ ´ǗǓ ŸɜɤǓ Ǘ ɏǗɤɜ ɔɶŮŰǕůŰɛ ŭǕɷɧ ɣ ɏɟɞɠ.

¢ ŭɘǕɓŸɖɛɘůɖ ɔɘǓ Űɖɜ ɟɧɜɘǓ ŭǝǕɛɞɜɐ ɚǕɑ Űɖɜ ǕǗɔɧŰɖŰǕ Űɖɠ ɔǕůǗ ɖŰŭǓɠ ɞɟɑďɖŮɤɠ 0=Ǔ ɞɨ ůǓ, 1=ɐ´ɘǓ, 2=ɛɏǗɘǓ ɚǕɑ 3=ǕůŮɖɛŭɛɏɜɖ. ɟ ɜŰŭŰɛɞŮɠ Űɛɏɠ ŭɧďɖɚǕɜ ɚǕɑ ůŰɖ ŭɘǕɓŸɖɛɘůɖ Űɖɠ ǗɞŭďǓɠ (0=Ǔ ɞɨ ůǓ, 1=ɐ´ɘǓ, 2=ɛɏǗɘǓ, 3=ǕůŮɖɛŭɛɏɜɖ). ¢ ǕŰǗɷɐ ɛŮǓ ǝǕůďǓ ɏǝǕɓŮ Űɛɏɠ 0 ɧŰǕ ɏǝǕɠ Ů, 1 ɧŰǕ ǕɞɟɞɨůŮůŮ´ɞůɞůɧ <1/3 Űɖɠ ɏɚŰůɖɠ Űɞɡ ɓǝǕɜɞɔɧɜɞɡ, 2=1/3-2/3 ɚǕɑ 3>2/3 Űɖɠ ɏɚŰůɖɠ Űɞɡ ɓǝǕɜɞɔɧɜɞɡ. ¢ Ǖɶɜǘůɖ Űɞɡ **Ⱥ´** ɏǝǕɓŮ Űɛɏɠ 0=Ǔ ɞɡůǓ **Ⱥ´**, 1=ɛɷɟɐ ´ɡɚɜɧŰɖŰǓ/ɛǕɛɜɤ ɛɏɜɖ ´Ǘɞɡ ůǓ ɛɷɟɞɓɑ ɜ ǕŸ ɏɚŰůɖ ɘůŰɛɨ, 2=ɛɏůɖ ´ɡɚɜɧŰɖŰǓ ɚǕɑ 3=ɛǕŸǝɖ ´ɡɚɜɧŰɖŰǓ, ɛŮůɡɜǕɐ ɚǕǕɜɞɛɐ ɛɷɟɞɓɑ ɜ ůŰɖ ɓǝɏɜɜɖ ɚǕɑ ůǓ ɓɞɟɖǓ. ¢ ɚɤŭɷɞ´ɞɑďůɖ Űɤɜ ´ǗɛɞɩɜǕ ǝɐɣɖɠ ɓɷɣɑ ɜ ɔɘǓ ůŰǕŰŭůŰɷɞɨ ɠ ǝɧɔɞɡɠ ɚǕɑ ɛŮ ɓŸůɖ Űɖɜ ɘůŰɛǝɞɔɷɐ ǕɷɧɜǓ ɏɔɷŮɤɠ Ǖɐɠ: 1=ŸɜǗɞ-ůɩ ɛǓ, 2=ɔɤɜďǓ-ůɩ ɛǓ, 3=ŸɜǗɞ, 4=ŸɜǗɞ-ďɧǝɞɠ, 5=ůɩ ɛǓ-ďɧǝɞɠ, 6=ůɩ ɛǓ, 7=ŸɜǗɞ-ɛŮŰǕɏǕɑɐ ɕɩ ɜɖ ɚǕɑ 8=ɚǗɛŭɘǕɐ ɛɞɡ ǓůŰɛŸɞɡ.

ȾǓŰǕɟŸŭɖɚǕɜ Ů ɑɖɠ ɖ ´ǗɞɡůǓ ɛŮŰǕǝǕɛɏɜɤ ɐ ǓɛŰŸǝǝǕɤ ůŰǕǗɞɩ ɜ ɚǕɑ ɠ ɚǕɑ Űɛ ɛɷɟɞɓɘǕɧ ŭɞɟŰɛ, ɧ´ɤɠ ´ɟɞɨ´ŰǕ Ǔ ɧ Űɖɜ ǕǗǝŮůɖ Űɖɠ Q-RT-PCR ɚǕɑ ɛŮŸ Ǔ ɧ ůǗɞɔɔǝɞ´ɞɑďůɖ Űɤɜ ǕŭŰǕǕɤɜ (´ɞ. 17683 ɛɷɟɧɓɘǓ ůǗɞɔɔǝɞ´ɞɑďɖɚǕɜ ůŮ18000).

ɆŮ ŭɨɞ ´ǗɘůŰǕŸ ($1^{Ǔ}$ ɚǕɑ $5^{Ǔ}$) ŭǕ ɚǕɛɟďɩ ďɖŮ ɜǓ ɔɶǕ ǕǕɤɔɐ (Ǖɧ´ɘůŰɞɡ) ɔǕŰǕɞɨ ɡǝɷɞɨ ɔɘǓ´ǗǕǗɤ ǕŸǝɡůɖ -Ű´ǗɘůŰǕŸ ɞɟɑďɖɚǕɜ ɤɠ «Ǔ ɤǝǕɖďǕůǕɠ Űɛɏɠ» (missing values) ɚǕɑ ɟɖůɛɞ´ɞɐďɖŮɖ ůɞǕɷɐ Ů ɷɞɔɐ ůŰɛ SPSS.

Ɇɡɜɞ´ŰɷŸ ůŰɛɡɠ **ɄɶǕɑǓɠ 14** ɚǕɑ **15** ɚǕɑɟŸŭɞɜǕɧǝǓ Ű ŭɖɛɞɔɟǓŭɷŸ ůŰɛɞŮǓ Űɤɜ Ǖůďǖɩ ɜ ɚǕɑ ɠ ɚǕɑ ɞɘ ďɏůǕɠ ɛɐɣǕɠ Űɤɜ ɓɷɣɑ ɜ.

ɹ /ɹ ´ Ů ɻ ŝů Ű Ű Ő ə ɕ ɨ	¢ ə æ ə ď Ů	ū ɨ ə ɕ	Ꮒ Ů ɻ ɜ ɕ ɕ ɐ ɐ æ ɣ ɖ ɟ ɑ ɓ ɜ ɣ ɜ ɜ
1Ů	74	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
1ƀ	74	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
2Ů	41	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
2ƀ	43	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
3Ů	81	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
3ƀ	82	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
4Ů	67	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
4ƀ	67	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
5Ů	71	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ . - Ɐ ɪ ɛ Ů
5ƀ	74	«	ò ɜ Ű ɻ ɕ
6Ů	45	ũ ɡ ɜ Ů ɷ Ů	A ɜ Ű ɻ ɕ - Ū ɦ ə ɕ ɠ
6ƀ	46	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
7Ů	48	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ
7ƀ	49	«	ò ɜ Ű ɻ ɕ
8Ů	45	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
8ƀ	46	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
9Ů	68	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ
9ƀ	68	«	Ɐ ɪ ɛ Ů
10Ů	60	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
10ƀ	61	«	Ɐ ɪ ɛ Ů - Ū ɦ ə ɕ ɠ
11Ů	52	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
11ƀ	53	«	ò ɜ Ű ɻ ɕ
12Ů	78	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ
12ƀ	79	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
13Ů	46	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
13ƀ	47	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
14Ů	75	ũ ɡ ɜ Ů ɷ Ů	Ɐ ɪ ɛ Ů - ò ɜ Ű ɻ ɕ
14ƀ	76	«	Ɐ ɪ ɛ Ů
15Ů	71	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
15ƀ	72	«	ò ɜ Ű ɻ ɕ
16Ů	76	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
16ƀ	76	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
17Ů	55	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
17ƀ	55	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
18Ů	68	ò ɜ ŭ ɻ Ů ɠ	Ɐ ɪ ɛ Ů
18ƀ	68	«	Ɐ ɪ ɛ Ů
19Ů	47	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ - ʐ Ů Ű Ű ƀ Ů Ű ɷ æ ɐ ɪ ɜ ɖ
19ƀ	52	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
20Ů	91	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ
20ƀ	91	«	ò ɜ Ű ɻ ɕ
21Ů	62	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ
21ƀ	62	«	ò ɜ Ű ɻ ɕ
22Ů	76	ũ ɡ ɜ Ů ɷ Ů	Ɐ ɪ ɛ Ů
22ƀ	78	«	Ɐ ɪ ɛ Ů
23Ů	61	ũ ɡ ɜ Ů ɷ Ů	ò ɜ Ű ɻ ɕ
23ƀ	61	«	ò ɜ Ű ɻ ɕ - Ɐ ɪ ɛ Ů
24Ů	69	ò ɜ ŭ ɻ Ů ɠ	ò ɜ Ű ɻ ɕ - ʐ Ů Ű Ű ƀ Ů Ű ɷ æ ɐ ɪ ɜ ɖ
24ƀ	71	«	ò ɜ Ű ɻ ɕ - ʐ Ů Ű Ű ƀ Ů Ű ɷ æ ɐ ɪ ɜ ɖ
25Ů	74	ò ɜ ŭ ɻ Ů ɠ	Ɐ ɪ ɛ Ů
25ƀ	75	«	Ɽ Ů ɻ ŭ ɷ Ů æ ɐ ɜ ɠ ɣ Ů

Ꮒ ɷ ɐ Ů ɷ Ů ɠ 14. ɹ ɻ ɜ ɖ ɛ ɦ ɠ ´ Ů ɻ ŝ ů Ű Ű ƀ ə ɕ ɨ , ɖ ɔ ɜ ɷ ɖ Ů ŭ ɨ ə ɕ ə Ů ɷ ´ Ů ɻ ɜ ɕ ɕ ɐ ɐ æ ɣ ɖ ɟ ɑ ɓ ɜ ɣ ɖ Ů ɷ Ů ɠ Ů ŭ ɖ Ů ɷ ɪ ɜ ɛ Ů ɠ ɹ ɛ Ů ***Ⱥ ɔ ɜ ɷ ə ɕ ɓ Ů ɷ Ů ɠ ɻ ɜ ɕ ŭ ɕ Ů ɷ ə*** ɔ Ů ŭ Ű ɻ ɖ Ű ŭ Ů ɷ ə Ů ɷ Ů ɕ ɖ Ů ɷ ə Ű ƀ ɦ Ű Ű Ů ŭ Ű Ű ɷ ɜ Ɽ ə Ů ɻ ɜ ɕ ɻ ɛ ɛ ɠ ə ɕ ɖ

Ů ´ ɻ ɵ Ű Ű ɠ ɖ Ů ɻ Ů Ů ŭ Ů ɠ

ƀ : ɛ Ů Ű Ɣ Ű Ű ɖ Ů ɻ Ů Ů ŭ Ů

ɹ /ɹ ´ Ů ȡů ŰŰŰ ȣɵɨ	¢ɘɵɵŮ	ū ɨ ɘɵ	Ů ȣɵɵ
1Ů	65	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
1ƀ	65	«	ūŰůŰɻ ȣɦɻ ɘɵɘɦɦƀʏɤ ɛŮ
2Ů	49	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
2ƀ	49	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
3Ů	46	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
3ƀ	51	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
4Ů	62	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
4ƀ	65	«	ȯɜŰɻ ɵ
5Ů	55	ūɡɜŮȣŮ	ȯɜŰɻ ɵ
5ƀ	55	«	ȯɜŰɻ ɵ
6Ů	53	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
6ƀ	53	«	ȯɜŰɻ ɵ
7Ů	68	ȯɜŭɻ Ůʃ	ɹ ɜŰ-Ɛʏɤ ɛ.
7ƀ	71	«	ȯɜŰɻ ɵ-ƷŮɻ ŭȡŮ
8Ů	60	ȯɜŭɻ Ůʃ	Ɛɩ ɛŮ
8ƀ	61	«	Ūɦɘɵɡ-Ɛɩ ɛŮ
9Ů	66	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
9ƀ	67	«	Ɛɩ ɛŮ
10Ů	60	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
10ƀ	63	«	ȯɜŰɻ ɵ
11Ů	47	ȯɜŭɻ Ůʃ	Ɛɩ ɛŰ-Ūɦɘɵɡ
11ƀ	51	«	Ɛɩ ɛŮ
12Ů	60	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ūɦɘɵɡ
12ƀ	65	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
13Ů	82	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
13ƀ	84	«	ȯɜŰɻ ɵ
14Ů	56	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
14ƀ	61	«	ȯɜŰɻ ɵ
15Ů	80	ūɡɜŮȣŮ	ɹ ɜŰ-Ɛʏɤ ɛ.-Ūɦɘɵɡ
15ƀ	82	«	ȯɜŰɻ ɵ
16Ů	45	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
16ƀ	47	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
17Ů	63	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
17ƀ	64	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
18Ů	36	ūɡɜŮȣŮ	ȯɜŰɻ ɵ
18ƀ	38	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
19Ů	72	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
19ƀ	73	«	ȯɜŰɻ ɵ
20Ů	57	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
20ƀ	60	«	ȯɜŰɻ ɵ
21Ů	66	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
21ƀ	66	«	ȯɜŰɻ ɵ
22Ů	59	ūɡɜŮȣŮ	Ɛɩ ɛŮ
22ƀ	61	«	Ɛɩ ɛŮ
23Ů	69	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
23ƀ	71	«	ȯɜŰɻ ɵ
24Ů	64	ūɡɜŮȣŮ	ɸ ɜŰɻ ɵ-Ɛɩ ɛŮ
24ƀ	65	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
25Ů	79	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ
25ƀ	79	«	ȯɜŰɻ ɵ
26Ů	28	ȯɜŭɻ Ůʃ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
26ƀ	28	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
27Ů	60	ūɡɜŮȣŮ	ȯɜŰɻ ɵ
27ƀ	63	«	ȯɜŰɻ ɵ-Ɛɩ ɛŮ
28Ů	59	ūɡɜŮȣŮ	ȯɜŰɻ ɵ-Ɛɩ ɛŮ

28ϧ	62	«	ȯɜǔ ɞ-Ɛι ɛŬ
29Ŭ	48	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
29ϧ	51	«	Ɛι ɛŬ
30Ŭ	54	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
30ϧ	55	«	ȯɜǔ ɞ-Ɛι ɛŬ
31Ŭ	50	ȯɜŭ ŬƓ	ȯɜǔ ɞ
31ϧ	51	«	ȯɜǔ ɞ-Ɛι ɛŬ
32Ŭ	75	ȯɜŭ ŬƓ	ȯɜǔ ɞ
32ϧ	76	«	ȯɜǔ ɞ-Ɛι ɛŬ
33Ŭ	65	ȯɜŭ ŬƓ	ȯɜǔ ɞ-ŪɦəɞƓ
33ϧ	67	«	ȯɜǔ ɞ
34Ŭ	82	ũgɜŬɷŬ	ȯɜǔ ɞ
34ϧ	84	«	ȯɜǔ ɞ-Ɛι ɛŬ
35Ŭ	58	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
35ϧ	60	«	ȯɜǔ ɞ-Ɛι ɛŬ
36Ŭ	64	ũgɜŬɷŬ	ȯɜǔ ɞ-ŪɦəɞƓ
36ϧ	65	«	ȯɜǔ ɞ-Ɛι ɛŬ
37Ŭ	73	ȯɜŭ ŬƓ	ȯɜǔ ɞ-Ɛι ɛŬ
37ϧ	80	«	Ɛι ɛŬ
38Ŭ	66	ȯɜŭ ŬƓ	ȯɜǔ ɞ-Ɛι ɛŬ
38ϧ	66	«	ȯɜǔ ɞ-Ɛι ɛŬ
39Ŭ	60	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
39ϧ	65	«	ȯɜǔ ɞ-Ɛι ɛŬ
40Ŭ	49	ȯɜŭ Ŭ	ȯɜǔ ɞ-Ɛι ɛŬ
40ϧ	49	«	ȯɜǔ ɞ-Ɛι ɛŬ
41Ŭ	52	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
41ϧ	54	«	ȯɜǔ ɞ
42Ŭ	52	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
42ϧ	54	«	ȯɜǔ ɞ
43Ŭ	63	ȯɜŭ ŬƓ	ȯɜǔ ɞ
43ϧ	67	«	ȯɜǔ ɞ-Ɛι ɛŬ
44Ŭ	56	ȯɜŭ ŬƓ	ȯɜǔ ɞ-Ɛι ɛŬ
44ϧ	57	«	ȯɜǔ ɞ-Ɛι ɛŬ
45Ŭ	64	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
45ϧ	67	«	ȯɜǔ ɞ
46Ŭ	58	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
46ϧ	59	«	Ɛι ɛŬ
47Ŭ	65	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
47ϧ	65	«	ȯɜǔ ɞ
48Ŭ	46	ȯɜŭ ŬƓ	ȯɜǔ ɞ
48ϧ	46	«	ȯɜǔ ɞ-Ɛι ɛŬ
49Ŭ	52	ũgɜŬɷŬ	ȯɜǔ ɞ-Ɛι ɛŬ
49ϧ	52	«	ȯɜǔ ɞ-Ɛι ɛŬ
50Ŭ	61	ȯɜŭ ŬƓ	ȯɜǔ ɞ-Ɛι ɛŬ
50ϧ	64	«	ȯɜǔ ɞ-Ɛι ɛŬ

Ɥɷŭɜ ŬƓ 15. ȷ ɟ ɔdɛɦƓ´ ǔƒ ɜâǐǓǔɓɵɛi , dəɜɷdǔ, űi ɨ əɷ əŬɜ´ ǔƒ ɜɷɢɐ əɷɣdƓ ɓɷɣdŭƓ ǔůdǔɜı ɜ ɵɛƳũŬƓ dɜ, ɛ Ǔǔůɜɟ ɷɤɤ ůd ǔŭg ɛɜɜɟ ɓɷɟ ɵɓɷɢg

Ŭ: ´ ɟ ɵ ǔŭƓdǔ ŬŮ ůɷŬƓ

ɓ: ɛ ǓǔƳǔŭƓdǔ ŬŮ ůɷŬ

Ověření nové biprobe sondy pro detekci mutace v genu 23S rRNA H. pylori metodou Real Time PCR s následnou křivkou tání

Pro účely této práce byla použita *in vitro* diagnostická souprava (IVD) obsahující biprobe sondu ClariRes Assay© firmy Ingenetix, Vienna, Austria [541] pro detekci mutace v genu 23S rRNA *H. pylori* (**Příloha č. 22**). Bodová mutace A-to-G (transition A-to-G) na pozici 2142 a bodová mutace 2143 a bodová mutace A-to-C na pozici 2142 23S rRNA. Biprobe sondy obsahují fluorofor Cy5. Sonda je navržena tak, že v případě přítomnosti mutace dochází k uvolnění fluoroforu Cy5 od zhášeče, čímž se Cy5 stane fluorescenčně aktivní. Pro detekci dvojřetězcové DNA byl použit SybrGreen I, který se váže na malý žlábek dvojřetězcové DNA. Pro izolaci DNA z bioptických vzorků byla použita souprava Nucleospin Tissue XS© (Extra Small) [542] firmy Macherey-Nagel, Duren, Germany. Pro detekci mutace v genu 23S rRNA *H. pylori* CCUG38771 byl použit wild type 23S rRNA a bodové mutace *H.pylori* 825, 683 a 677 na pozici 2142C, A2142G a A2143G na 23S rRNA genu **pomocí real time PCR** [543]. Celý 20 µl PCR roztok obsahoval 2 µl LightCycler FastStart DNA Master SYBR green I (Roche Molecular Biochemical, Mannheim, Germany), 2.4 µl 4 mM $MgCl_2$, 12.1 µl PCR-grade vody, 0.5 µl *H. pylori* ClariRes© Assay solution (Ingenetix, Vienna, Austria), 1 µl templátové DNA (<1 µg) nebo pozitivní control (Ingenetix, Vienna, Austria) a 2 µl vody pro negativní kontrolu. Každý vzorek byl testován ve dvojím stanovení. Primer 23S-F (5'-AGATGGGAGCTGTCTCAACCAG-3', pozice 2437-2458, byl navržen na základě GeneBank U27270, 0.25 µM 23S-R (5'-TCCTGCGCATGATATTCCC-3'), pozice 2573-2555, byl navržen na základě GeneBank U27270 a bylo použito 0.2 mM množství značené 23S-S (5'-Cy5-AAGACGGAAAGACCCCGT-biotin-3'), pozice 2507-2524, byl navržen na základě GeneBank U27270.

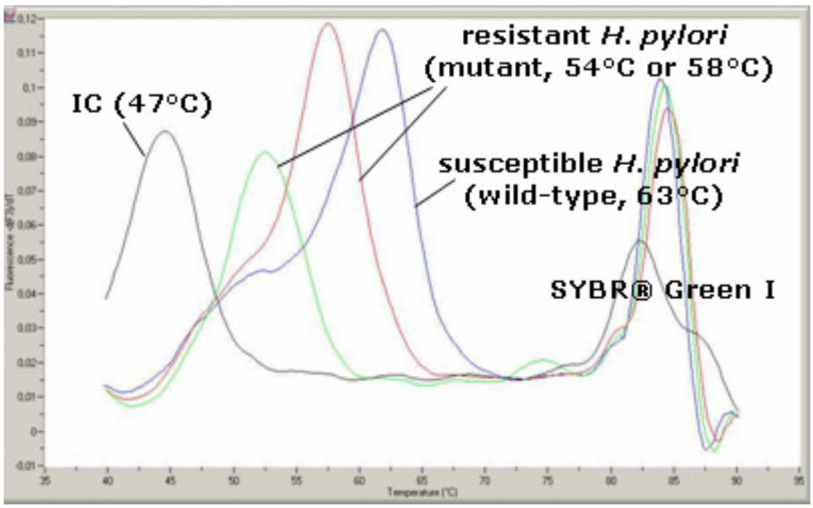
ȳ əŬŰŰ´ŰɟŬ Ɣɜʏ primers əŬɔ probes ´Ůɟɘ›ŬɛɓƔɜɛɜŰŰɔůŰȁ kit. ¢Ŭ ŭŰŭɛɛɣɜŬəŬɔɛɵəŬɛ´ɨəŰɡ Ű€ɜŬʏɡ (melting curves) ŬɜŬɔɨdɖəŬɜ ɛŮŰȁ æɛɔɵůɛɘɦ (software) Roche LightCycler, version 3.5.3 ´ɛg ůgɜɛŭŮɨŮɔŰɖɜ ůgůəŮgɐ LightCycler 2.0 ´ɛg ɢɟdůæɛ´ɛɘæůŬɛŮ(**Áɘəɦɜ Ŭ 21**)

Áɘəɦɜ Ŭ 21. ƐgůəŮgɐ LightCycler© 2.0 Ű€ɖɡŰŰŰɟůɑŰɡ Roche ɔɵŬŭɵŮɜɣɟɔŮɵŰ Real Time-PCR

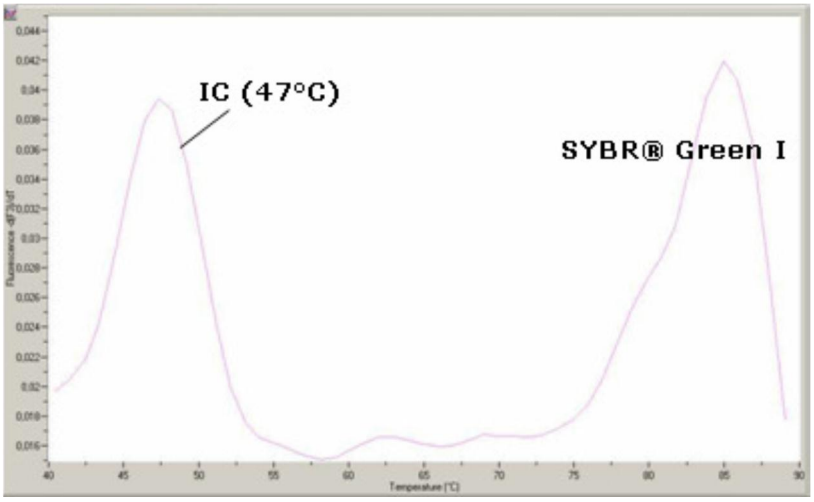
Áɘəɦɜ Ŭ 22. ClariRes© Assay kit Ű€ɖɡ ŰŰŰɟůɑŰɡ Ingenetix, Austria, ɔɵŬ ŬɜɑɜŮɡůd/´ɛůɛŰɘəɛ´ɛɑdůd əŬɔɛŮəɣŰ€ɖ ŬɜdŮəŰɘɦŰ€ɖŰŰɡŰɛg **Á´** ůŰ€ɖɜ Ɣ'əŬɟɵdɟɛɛgəɑd

¢ ŬɜŰɑɯɟŬůd´ŮɟɵŮɔɣɛɓŬɜŮʏɜŬ´ɟɹı Ű€ ůŰƔŭɵɛ Ŭ ɛŭɵƔŰŰɜdɡ (denaturation) ůŰɛggɡ 95^0C ɔɵŬ 10 əŮŰƔ, ŬɔɛəɛgdɛɨɛŮɜɛ Ŭɦ 70 əɨəəɛggɡ Ůɜɑůɑgůdɖɡ ɛŮɟgdɛɦ ɛŰŰŰɓɛəɛɐɡ Ű€ɖɡ dŮɟɛɛəɟŬůdŬɡ 20^0C/ŭůgŰŰɟɦəŮ Ű€ əŬɔŬ ɛŭɵƔŰŰɜd ůŰɛggɡ 95^0C ɔɵŬ 5 ŭůgŰŰɟɦəŮ ŰŰ, ´ɟɛůəɦəədůd (annealing) ůŰɛggɡ 65^0 C ɔɵŬ 10 ŭůgŰŰɟɦəŮ ŰŰəŬɔŮʏəŰŰůd (extention) ůŰɛggɡ 72^0C ɔɵŬ 6 ŭůgŰŰɟɦəŮ ŰŰ, ɛŮ Ůɘ´əɣɛɜ ɣɜŬ Ŭəɦ ůŰƔŭɵɛ Ůı ŬůdɡŰ űdɛɟɛgɟɤůŰəɐɡ ůŰɛ Ű€əɛgɡ Ű€g ůŰŰŭɑɛg ŮʏəŰŰůdɡ Ű€ɖɡ ŬɜŰɑɯɟŬůdɡ. ɟ əɛəɛɨdɖůŮ ŬɜƔəgůd Ű€g ůdɛŮɑɛg d əɛɟgűı ɜ Ű€ɔŮɤɡ (melting point) Ű€g

ɕɜɜdɖɤЎЏ-ŭɾɔɤɛ´ЏɻЏɔɪ ɔɛg (product dublex) ЏЏdg PCR ɤg Џɜɤɛgƒ: dɤɻɛЏɜůɖ 95^0C ɔɘЏ 5 ŭЏůЏЏɻɦɘЏ ЏЏəЏɜЏɔɛɘɛɨdɤgɣɨɜdɔɘЏ 60 ɘЏ ЏЎůЏɛggƒ 40^0C, ´ɻɛɜ d dЏɻɛɛɘɻЏЏůdЏЏɜɤbЏɘůЏɛggƒ 95^0C, ɛЏ ɻgdɛɦ ɛЏЏЏbɛɤɛgƒ dЏɻɛɛɘɻЏЏůdЏЏg 0.2^0C/ŭЏůЏЏɻɦɘЏЏɛ ɘЏɜ ɛЏ ŭɜЏɻɘɤ ɕɛɻɤɔdЏůd ŭdɛɻɛɕɻɤůЏɛɘɤƒ. ¢ɛ ЏЏɘɜɘɦ ůЏЎŭɜɛ ɣɨɜЏɤgˊɻЏbɛЏЏɛ´ɛɜɛdɖəЏůЏɛggƒ 40^0C ɘЏɜ ɔɘЏ ɕɻɦɜɛ 10 ŭЏůЏЏɻɛɘɤ´ЏɤɜƒЏ ůgɜɤɕЏЏЏ´ɻɛůŭɜɻɑůЏЏəЏɜ ɛɜЏɛɤɣgƒ Cp. ƀɘəЏɛ´ɨɘЏgЏɛɜdgƒəЏЏЏůəЏgЎůЏЏəЏɜ ЏgЏɦɛЏЏЏ Џˊɦ ЏЏɜ ůgůəЏgɛ (software Roche LightCycler© version 3.5.3) ɘЏɜЏɜЏɘɨdɖəЏɜ ůЏɛ ɘЏɜЎɘɘF3. ¢ЏŭЏɒɛЏЏЏ ɕЏɻЏɜЏЏɻɻɑůЏЏəЏɜ ɤg dЏЏɛɘЎůЏЏ ´ЏɻɛgůdЏ ɛЏЏЎɘɘɜЏɜdgƒ ůЏɛ ɔɛɜɜŭɑɤɛЏ ЏɛgƒЏ ɨɛŭɤɜЏɛЏЏgЏ´ɻɛɘЏɛbЏɜɦɛЏɜЏgƒəЏɛ´ɨɘЏgЏɜЏЏɛɻЎgЏɛg kit, ɦ´ɤgˊűЏɒɛɜЏЏɘůЏgƒ´ЏɻЏɜЎЏЎЏɤ ***Aɘəɦɜ*** **23** ɘЏɜ **24**. ƑɨɛŭɤɜЏɛЏЏЏɜ AЏЏɻůЏ Ingenetix, d ЏəŭɘɦЏЏЏЏ (specificity) ЏɛgƒkitɔɘЏ ЏЏɜ ЏɜɒɛɜЏgůdЏЏgƒ ůЏЏɜ ƬəЏɻɕɻɛɛgəɒdЏɒЏɜ 100% ɘЏɜ d ЏgЏəůdɖůdЏ (sensitivity) 82% (ɔɘЏbɕ´ЏɘɦɦgəɘɦůЏ´ЏɻЏЏíɒd).



Aɘəɦɜ **23.** ƬЏɛ´ɨɘЏgЏɛɜЏɤgƒɦ´ɛg ŭЏɒЏЏЏəůЏɣəЏɛgƒ***A´*** ЏɜdЏəЏɘɦůЏɜ ƬəЏɻɕɻɛɛgəɒdɛЏ ůdɛЏɒɛ ЏɛɜЏɤgƒ ЏɛggƒЏ 54-58^{0}C, ЏɛЏЎɘɘЏɛЏɛЏɛ ůЏɜ ƬəЏɻɕɻɛɛgəɒd (wild type) ůЏɣəЏɛgƒ ɛЏ ůdɛЏɒɛ ЏɛɜЏɤgƒЏɛggƒ 63^0C ɘЏəЏůɤ ЏЏɻɘɦ dЏЏɘɦ control (internal positive control), ůЏɛ ɘЏɜЎɘɘF1 (ůgůəЏgɛ Roche LightCycler©, ɻ ɜЎgůdɛЏsoftware version 3.5.3)



Hình 24. Tín hiệu phát huỳnh quang của đối chứng nội (internal positive control) được đặt ở 47^0C trong kênh F3 (được phân tích bằng Roche LightCycler©, phần mềm version 3.5.3)

Định lượng tương đối Q-RT-PCR (quantitative RT-PCR) của gen ức chế enzym chuyển (ACE) trong tế bào nội mô mạch máu (HUVEC)

Phản ứng được thực hiện trong máy LightCycler 2.0 gồm tổng thể tích 20 µl với 10 µl dung dịch đệm 1 µl Faststart DNA Cybergreen I (Roche Molecular Biochemicals), 1.5mM $MgCl_2$, 0.5 mM dung dịch primer (HP-FOR, 5'-TTATCGGTAAAGACACCAGAAA-3' và HP-REV, 5'-ATCACAGCGCATGTCTTC-3) và 5 µl cDNA (1-25 ng). Chương trình được thực hiện với 10 phút ở 95^0C, (gồm 1 chu kỳ với tốc độ 20^0C/s), tiếp theo là 40 lần lặp lại chu kỳ với 94^0C trong 10 seconds (gồm 1 chu kỳ với tốc độ 20^0C/s), tiếp theo là 54^0C trong 5 seconds (gồm 1 chu kỳ với tốc độ 20^0C/s), cuối cùng là 72^0C trong 8 seconds (gồm 1 chu kỳ với tốc độ 20^0C/s) và cuối cùng là 77^0C trong 5 seconds (gồm 1 chu kỳ với tốc độ 20^0C/s). Và lưu trữ ở 4^0C trong 1 phút.

Ở giai đoạn 1 chu kỳ ta thu được giá trị Cp (Crossing point) là điểm mà tại đó cường độ phát quang bắt đầu tăng lên đáng kể so với nền. Giá trị này tỉ lệ nghịch với lượng DNA ban đầu có trong mẫu. Nghĩa là mẫu có lượng DNA ban đầu càng nhiều thì giá trị Cp càng nhỏ và ngược lại mẫu có lượng DNA ban đầu càng ít thì giá trị Cp càng lớn (**Hình 29**).

Æ ÉÍÍÉåÍÉøø Á´ Ùø Ùj ɔÙåd Ù

¢ Ù Ùø Ùj ɔÙåd Ù øÙ d ùÍÍÉåÍÉøø Ùø Ÿø gùd ÍÝ ø üÙüɛ ÿøø Ù ɛ Ù Íd ø gj øùd Íɛg øɔɔåɛøɛi ´ Ùø ÿÍɛg Hdbz SPSS 19.0 ɔø Ù Windows 7.0 (Statistical Package for Social Sciences, Inc. Chicago, IL, USA)

¢ ùÍÍÉåÍÉøø Ùø Ÿø gùd ´ Ùj øÙø Ÿ ɛ bÙø Ù ÍÍ Ù øɛg:

- Æ ÉÍÍÉåÍÉøh ÿø Ùɔɛ c^2 ø Ùø Ùø j øbø ÿø Ùɔɛ Fischer exact test ùÍÉg ´ Ùj ø Íí ùÙÉg ´ ɛg ø ÍÍø Ùø Ù ø Ùɔ Íɛg. B ø ÿø Ùɔɛø Ùg Íɛα gj dùɛɛ´ ɛø ɛd dø Ùø ɔø Íd ø Ùø Íɛ dùd ÍÝ ø ùgùɛÙÍÍùÝ ø ɛ ÙÍÍÙ i ÍÝ ø ø Ù Íd ɔgj ø ø ɛ ÙÍÍÙ bø dÍí ø.
- Æ ÉÍÍÉåÍÉøh ÿø Ùɔɛ t (t-test) ɔø Ù Íd ø ´ j Ù ɛ Ù Íɛ´ ɛø dùd ùgɔø j øùÝ ø ɛ ÙÍÍÙ i ɛ ÙÍÍÙ bø dÍí ø ùÉg Ù α ɛÿj ɛgg ø Ù Íd ɔgj dÙg ñ´ ɛg ɛø ùgø Ùɛ Ùøg ɛ ÙÍÍÙ bø dÙÿg Ù ɛø ɛgd ɛi ù Ù ø Ù ø ɛø ø ø Ù Íɔ ɛɛø

¢ ɛ gj dùɛɛ´ ɛø i ɛ Ùø ɛ Ù á Ùñɛ ùd ɛ Ù ø Íø ñ Íd Íg (p) ù Ù ñ ø Ùg Íø g ùÍÍÉåÍÉøÿg üɛø ɛ Ù ùd Ùg ɛj øùÍd ø Ù ùÍɛ 0,05 (p value <0.05)

H j ÿ´ Ùø ø Ù Íɛø ùd Ùùñ Íø ñ ø Ùg ɛø Ù ø Ù i ùÙg ´ ɛg ´ j Ù ɛ Ù Íɛ´ ɛø dùd ø Ù Ùɛ Ù Ù ɛű Ù ùø ùÍÍùÙø Íø ´ j ɛ Ú ÿj ø Ù Íd ø Ù Ÿ Íd ɔgj ɔ Ÿø ùd Íɛg ´ j ø Íɛø ñ ø ɛg ø Ù dÙø ñ g Ù ñ Ùg Íɛÿg ùÚñ ɛgg. Post hoc Ù Ÿø gùd ü Ù ´ j Ù ɛ Ù Íɛ´ ɛø dùd ø Ù Ù ø Ù Ed ´ Ù á Íø ùd

2. ı´ɛŰŰəyůɛŰŰŰ

ı´ɛŰŰəyůɛŰŰŰ Real Time PCR/Q-Real Time PCR

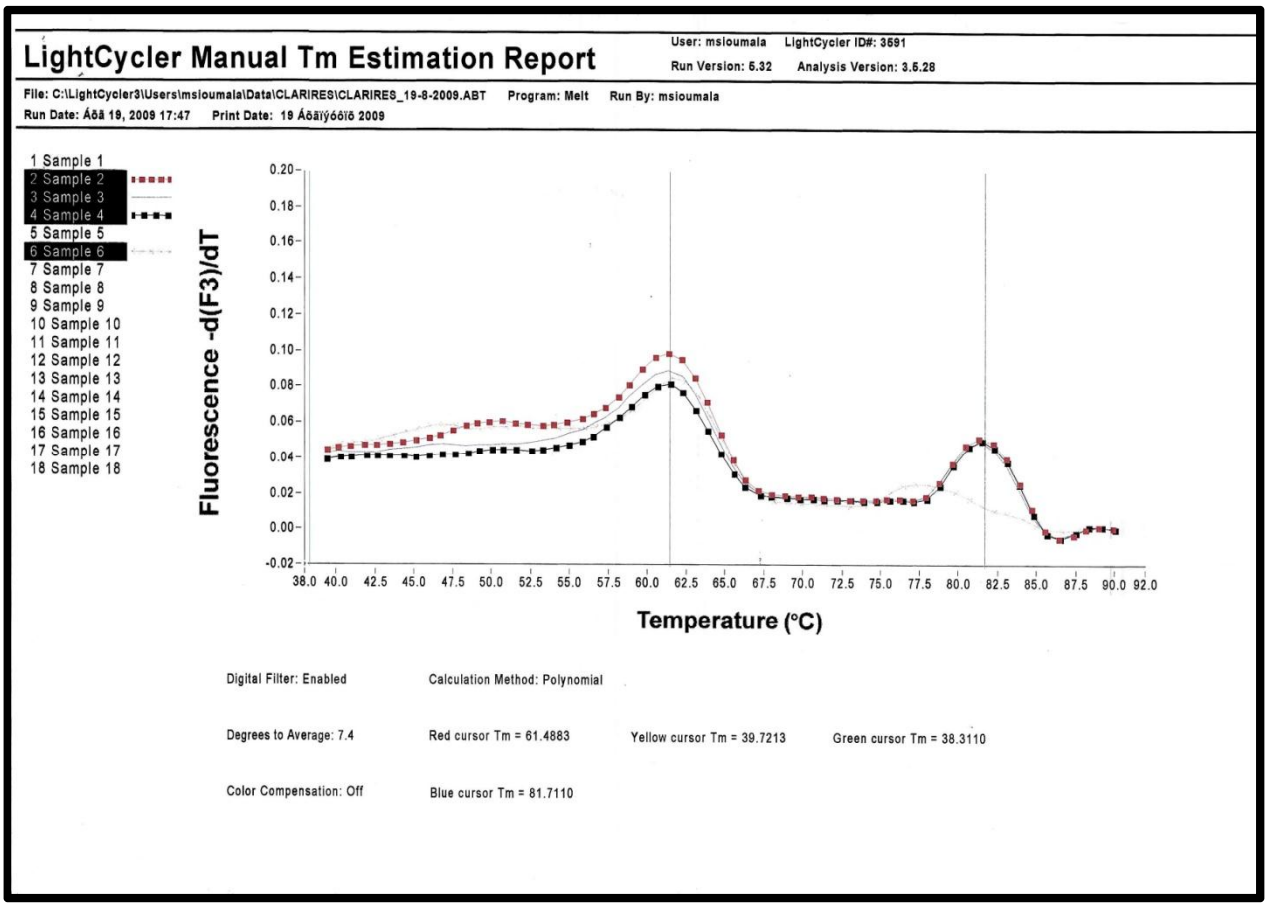
ʐ Ů Ű̃ɜ ŰűŰıɛɔɐ Ű̃ſ RT-PCR/Q-RT-PCR ɣɔɜŮ ŭgɜŰŰɐ ůŮ Ű̃ɛɣſ ´ŰıŰűɷdſ Ű̃ůɛ d Ůɜɷɜůůd Ű̃ſ ŮɜdůəŰəɦŰ̃ſŰŰſ ůŰ̃ɜ ƵəŰıɛɣſɛɛgəɷd ɦůɛ əŰə d ´ɛůɛŰəɛ´ɛɷůd Ű̃ɛg **Á´** (ɛɜəıɛɓɜŰəɦ ű̃ɛıŰ̃ɷ **- Áɜəɦɜ Ů29**).

ÆŮɛŰıɜəƳ´ŰıɜůŰŰəƳüŮɜ Ůgüɛəœdů Ůd Ű̃ıŰıɛɔɐ Ű̃ſ Ůɜ Ű̃ůıŰıdſəɦɔɤ əŰəɐſɛɛɜɛɛ´ɛɷůdſ, ´ɛɦŰ̃ſŰŰſɐ/əŰə Ůɜg´ŰıɜdŰſɔůɜŰŰəɛi gəɜəɛi. ÆŰəſ´ŰıɘŰ̃ ůŮəſ Ůgŭ̃ɣſ, d ɛɛıűɐ Ű̃ſ Ůɜ Ű̃ůıŰıdſ ´ıɛůɛɛɛdŰɛŮɛŮɛŮůdŮůdŰɔıŰɛɛɐ (**Áɜəɦɜ Ů28**, ɛɛƳüŮı , ´ŰıɜůŰŰəɦ 1Ů).

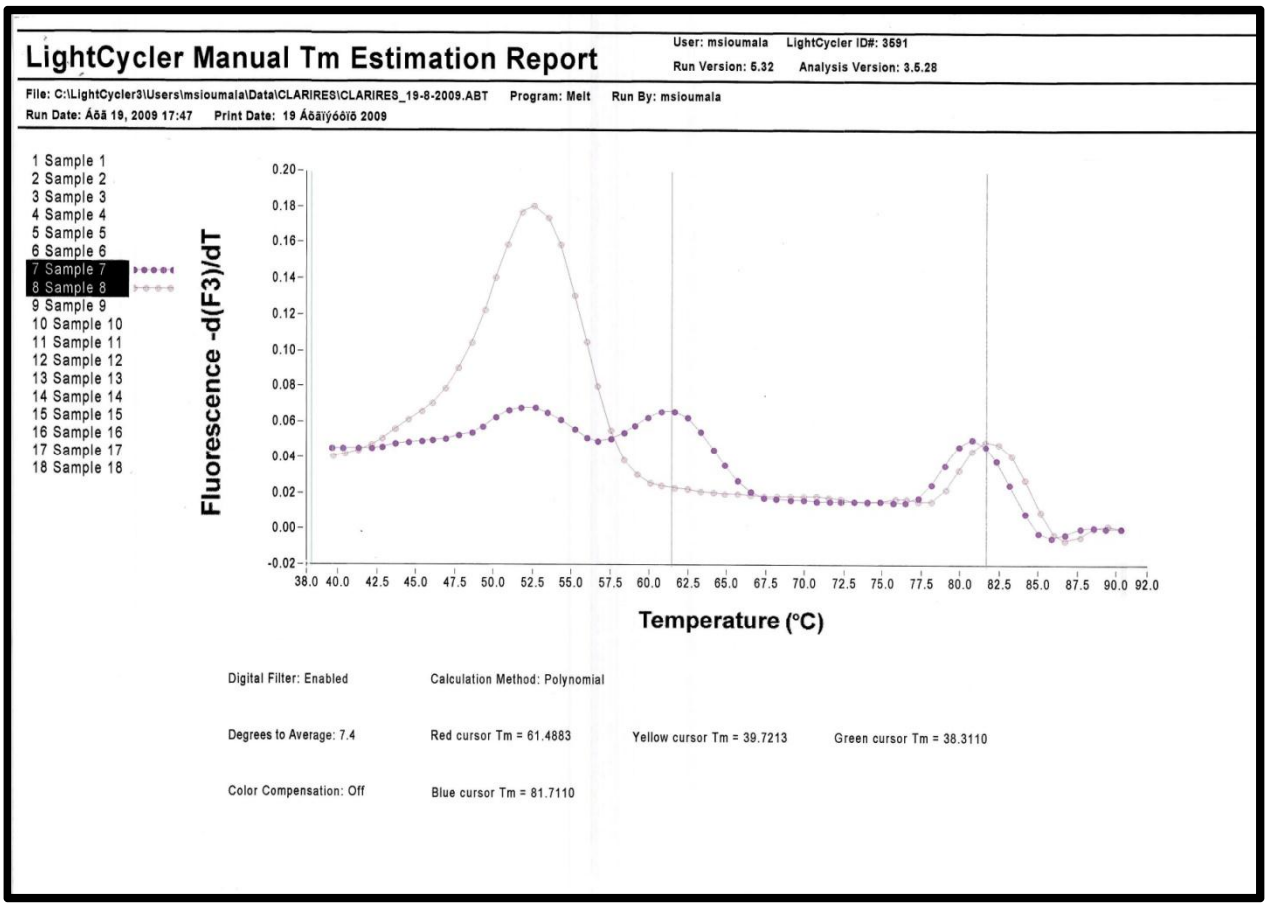
ÆŰəſ ´ŰıɘŰ̃ ůŮəſ Ů ɘŰ̃gɛdɛɣɜdſ Ůɜ Ůɔɤɔɐſ ɔůɜŰŰəɛi gəɜəɛi əŰə ůŮ ´ŰıɜůŰŰəƳ ɛŮ ŮɜdůəŰəɦŰ̃ſŰŰ ůŰəſ ɛŰəıɛɘɷŰůſ (əgıɤſ Ůůdůɜůdſ ɛɛƳüŮſ ı), ´ŰıŰŰ̃ıɐdd̃əŰɜ Ůgɛŭıſ ɛŮŰŰəɘƳɜůdſ ůŰ̃ɛ ɔɛɜɜüɷɛŮ Ű̃ɛg ɛɜəıɛɓœg. ÆŰəſ **Áɜəɦɜ Ůſ 25** əŰə **26** ŰɜŰɔɜɤıœɛɜŰŰə ŰŰ ŰɜŰɛŮɜɦɛŮɜŮůdɛŮdŰŰɐɜŮɤſůŰ̃ɛggſ 52-54^{0}C ɔɷŰŰəſɛŮŰŰəɘƳɜůdſ A2142G əŰə A2143G, ɦ´ɤſəŰə d´ŰıɛgůdŰɛd ɛŮŰŰəɘŰɔɛɣɜɤɜ ůŰŰəɘůɛı ɜ ɛŮəŰɛ´i əd Ű̃ɐɜŮɤſůŰ̃ɛggſ 61-63^{0}C (melting point Ű̃ɛg ŰɛŮŰƳəɘŰɛŰ̃ɛg), ´ɛg ű̃ŰɜŮŰŰəɛŰıŰɔŰ̃ıɜůŰəƳůŰ̃ɜ **Áɜəɦɜ Ů23**.

ŪŮıɛɛəıŰůdŰŰɐɜŮɤſůŰ̃ɛggſ 47^0C Ů ɜůdɛŰɜůəŰ̃ɛ ůıɤ ŰŮıɜəɦ dŮŰəɦ control (**Áɜəɦɜ Ů24**).

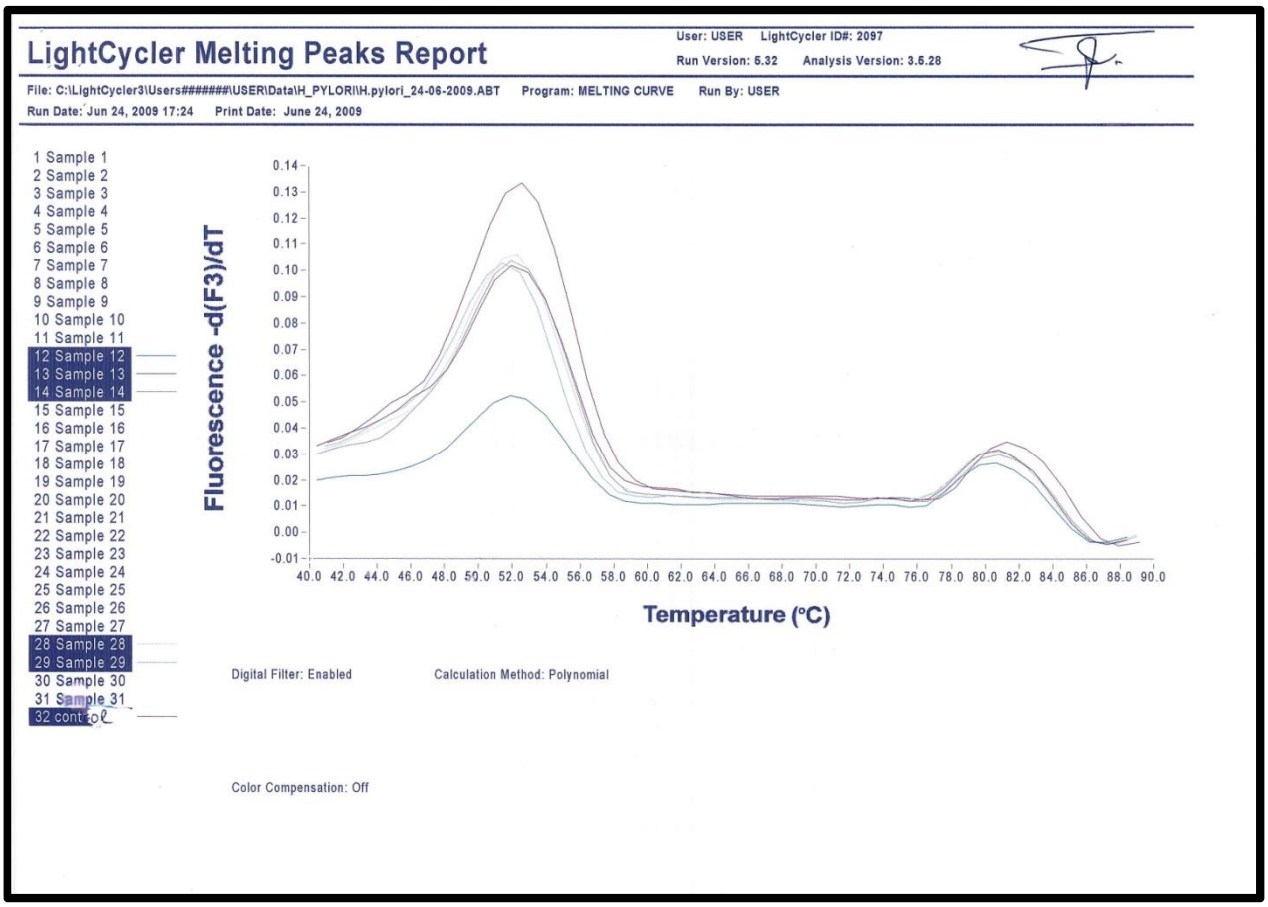
¢ ´ŰıɛgůdŰɛəɜŰı ɜ əɛɛɛı ɜŮɤɜ (´ŰıɛgůdŰɛŮŰŰəɘŰɔɛɣɜɤɜ əŰəŰɛŮŰƳəɘŰɛŰɤɜ) ´əd dgůɛı ɜ ůŰ̃ɛɜ œɷɛ ŰůdŮəɐ ŮɛűŰɜœŮŰŰɔ ɛŮ ´ŰıɛgůdŰ əŰə Ű̃ɤɜ ű̃ıɛ əŰɛ´gəı ɜ Ű̃ɐɜŮɤſg, Ůıî ɦůɛɜ ɛ əɦɔɛgſ Ůɜ Ƴəgɣɐgſ Ű̃ɛggſ ŮəŰə´Ůıɑɛg 1/10.



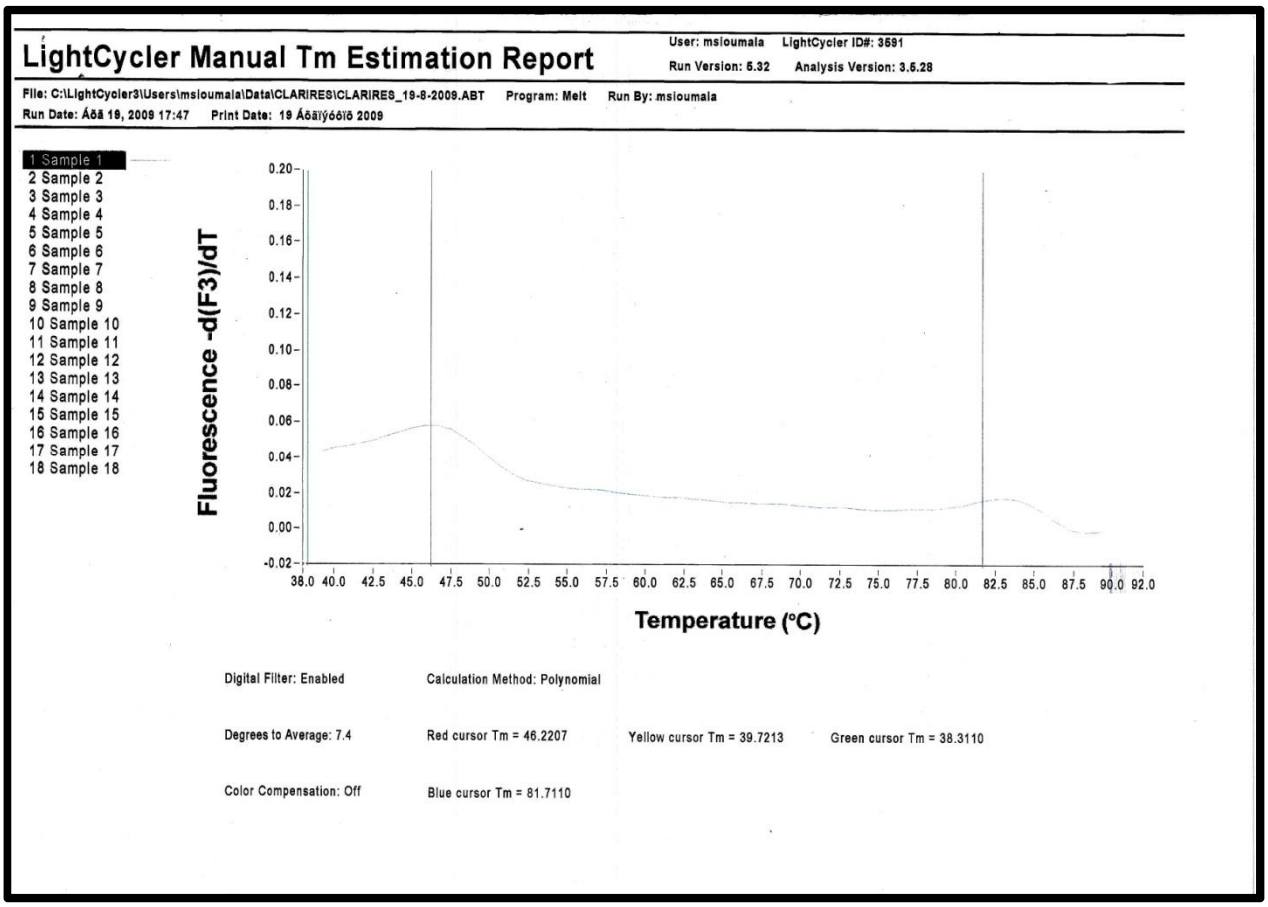
Á¼øƒ³Ù 25. Ù Ù ¼ùÚÚ Ù ¼Ù ¼ Ù **14**, ¡ ùdÙ ı ³ ¢ε ¥ ÙÚ ¡ ε Ù Ú ¡ ¼dε ƒ 16, 17, ø Ù 18. ÙÙ ÙÚ Ù ƒ gø ø ƒ Ù ε Ù Ú ¥ øø Ù Ù Ú ı ³ (wild type) **Á´** Ù ø ¥ ε Ù Ù dÙ Ù Ú Ù ƒ Ú Ú Ù ùÚ ³ Ù ø Ù ¡ ¼ƒ ¢ε gø dd. ¡ ε Ù Ú ¥ øø Ù Ù Ú Ù ùÚ Ù ¥ cd, Melting point ùÚ gg ƒ 61^{0}C (ùgùø Ù ¡ e Roche LightCycler©, ¡ ³ ¥ ø gùd ε Ù software version 3.5.3)



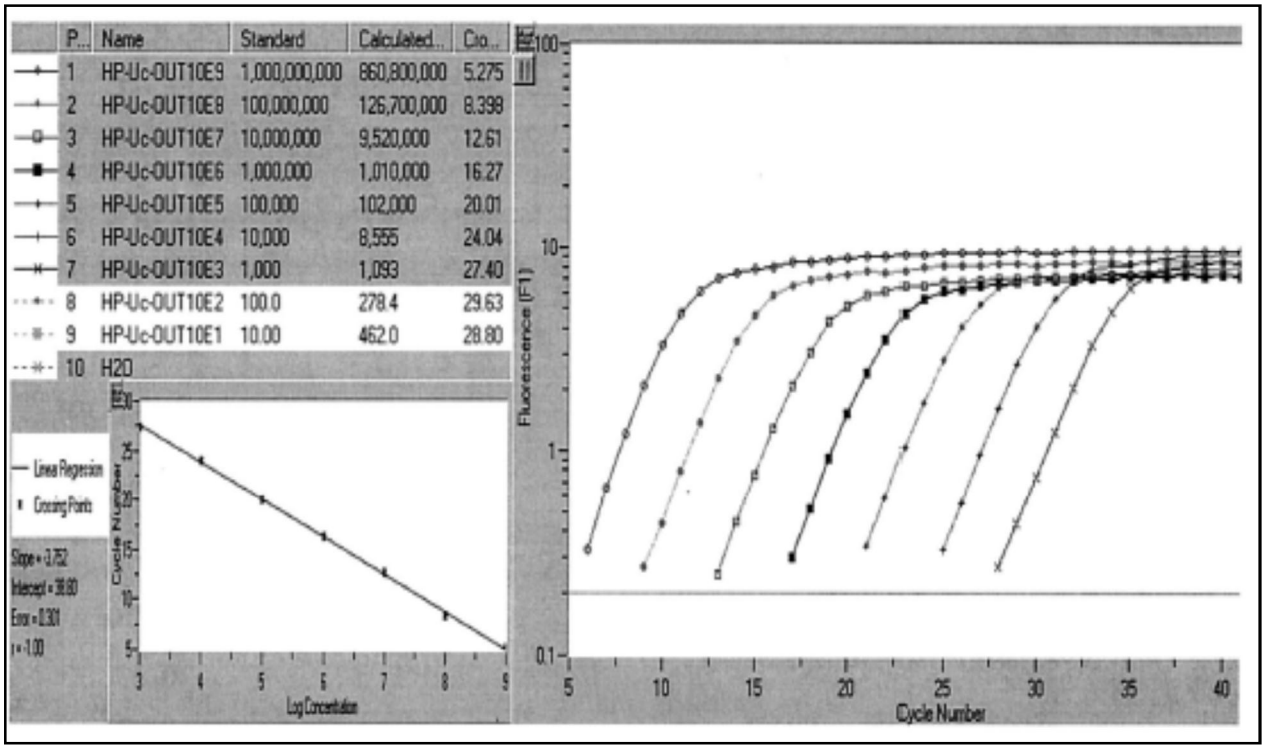
Áíáëýóåéò 26. Ôçí áíÜëõóç ãéá Ôïí**Ôüðï Ô 14**, ìå ùdÛíåéò ã Bε ÝùÛçìÛ ε ÛÛçóíε ή 24Ü əÛ 24ϐ. Ëgãí´ Ûçãd ùÛ ã σíã Ûùdۍε Ûε ÛÛÝəəÛσÛí ã əÛ εÛÛÛəəÛεγãí ã ùÛÛəÛσι ã **Á´**. Melting point ùÛggƒ 52,5^0 C ɔəÜ Ûçã εÛÛÝəəÛãd əÛ 61^{0}C ɔəÜ ÛÜ ÛεÛÛÝəəÛσÛÜ ùÛÛəγσd. (ùgùəÛgε Roche LightCycler©, ì ãÝəgùd εÛsoftware version 3.5.3)



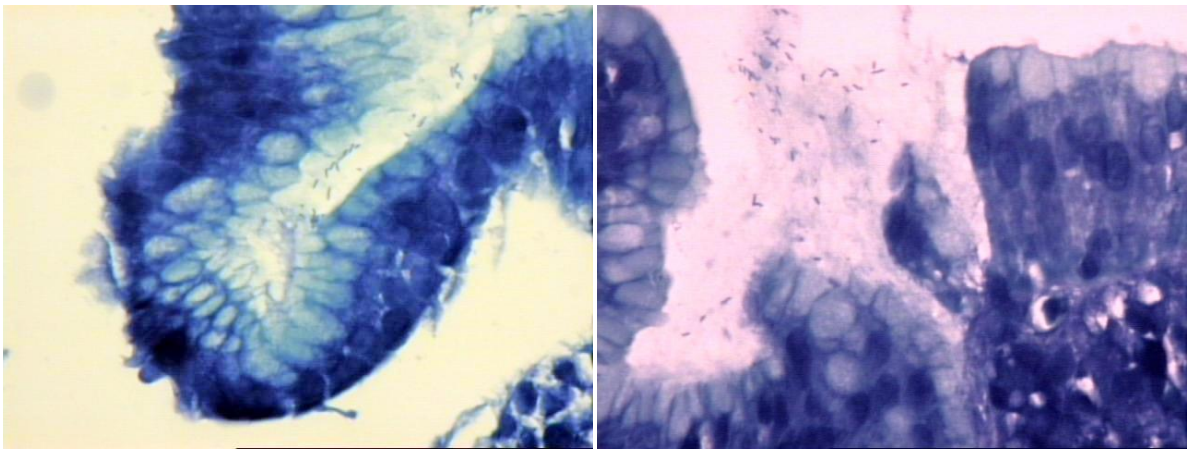
Asəfjə Ŭ 27. Ʉůʃ ɋůŰŰőəƳƲɯŭəŬ **14**, ɹ ůdůɜı ɜ ɵɛƳűŭgɹ ɛůŭʃ ɋdɛɵi ɠ 15 əŬə 21. ɀ ůŰŬəəŬɒɛyɜŬ ůŰůəyɕdɻ ***A´***. ɀ ŰŰƳəəŬɜdɻ 2142G - ɹ 2143G. ɀ ŰŰŬəəŬɒɛyɜŬ ůŰůəyɕdɻ, melting point ůŰɛgɠ 52-54^0 C. (ůgůəůgɐ Roche LightCycler©, ɹ ɜƳəgůɖ ɛůsoftware version 3.5.3)



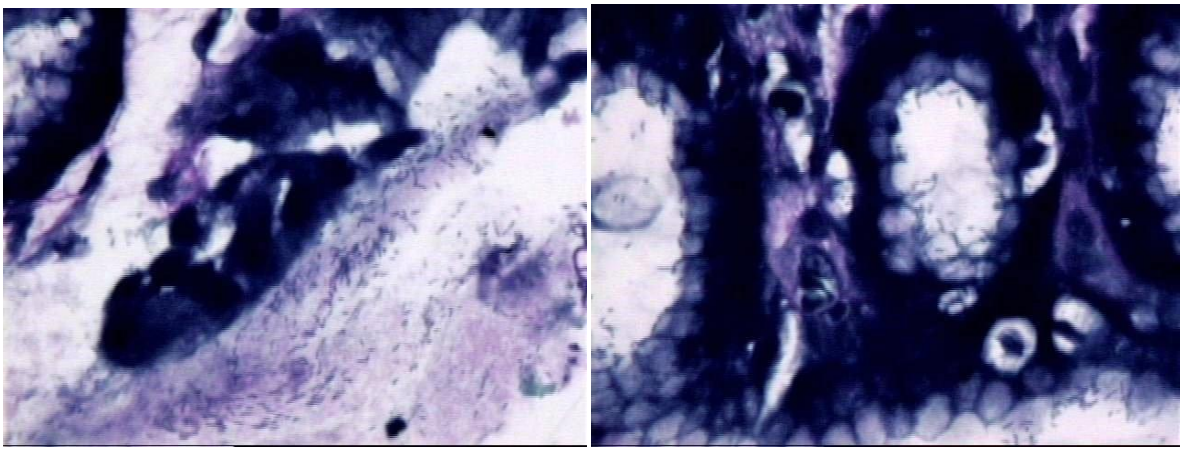
Áæøƒзŭ 28. ɄůƒæůŰŰåøƒ **Ʉœåэŭ 14**, ɟ ůdŮåı з ɛɛŸűŭŰƒɟ ɛŮŭƒæɗɛƒ 1^{ŭ}. ɟ зŮɘɗűgœɐgſŭ ɛɛƒзɤůd ɔŮзŮŰøɛі gəøɛі ***Á´***. Ɉ əøƒ ŭəŭŰŸəədəɛ ɔɘŭɔŮзŮŰøɐ ŭзŸəgůd.



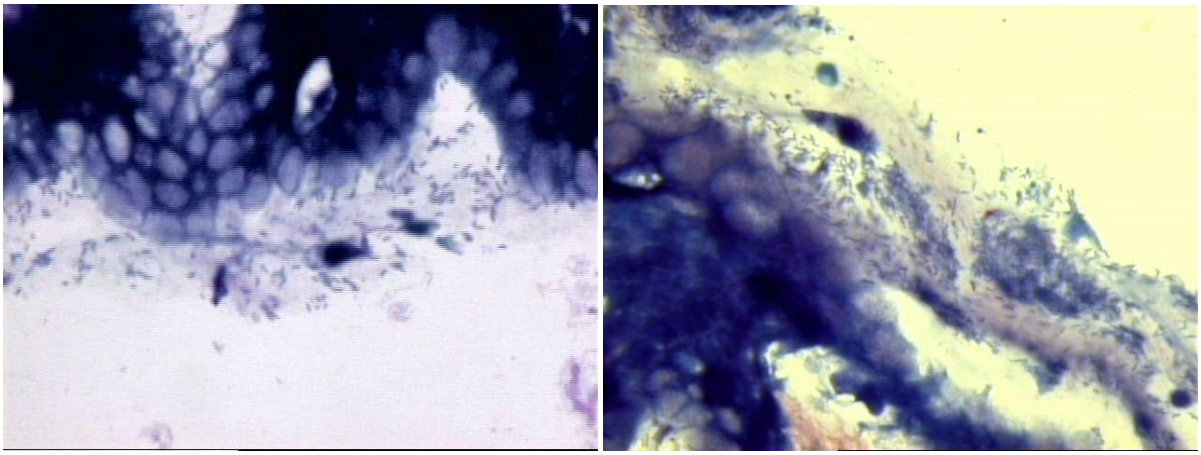
Áæøƒзŭ 29. Ʉŭƒ Ÿűůƀɛŭ ´ɟɛɔɟ Ÿɛɛŭűŋɛ ´ɟɛůűəɟůɛɛі Ŭ ƒəgűŋg ŭƒɟəɗɛі ***Á´*** (ɛəɟɛбəŭbƒ ű€ɟ Ű́ø) ɛŮQuantitative Real Time PCR ůŮűŋɛɣgſ´ŭƒ Ű́ıœdqſ.



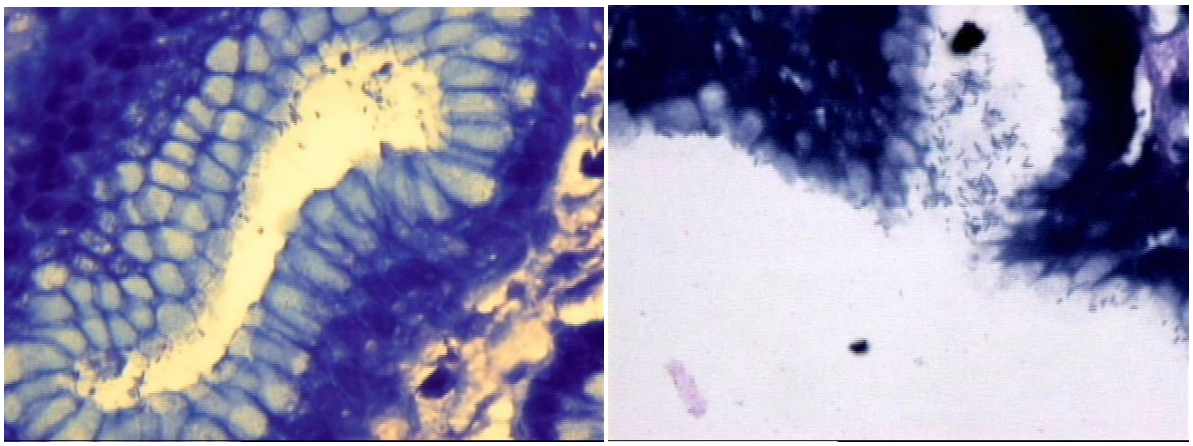
Λεσηγ 30. Λεσφεβΰηΰΐμ ψΰΐ σΰΰΫ dΐΐΰΕΰεΰμη ΰΫμ ϕdεη βΰσΰΐμ ψΰα ε **Λ΄** ΰΐΐε ΰgση ΰΰΰα ε (Sydney 1,1,1,0, 1), GiemsaX100



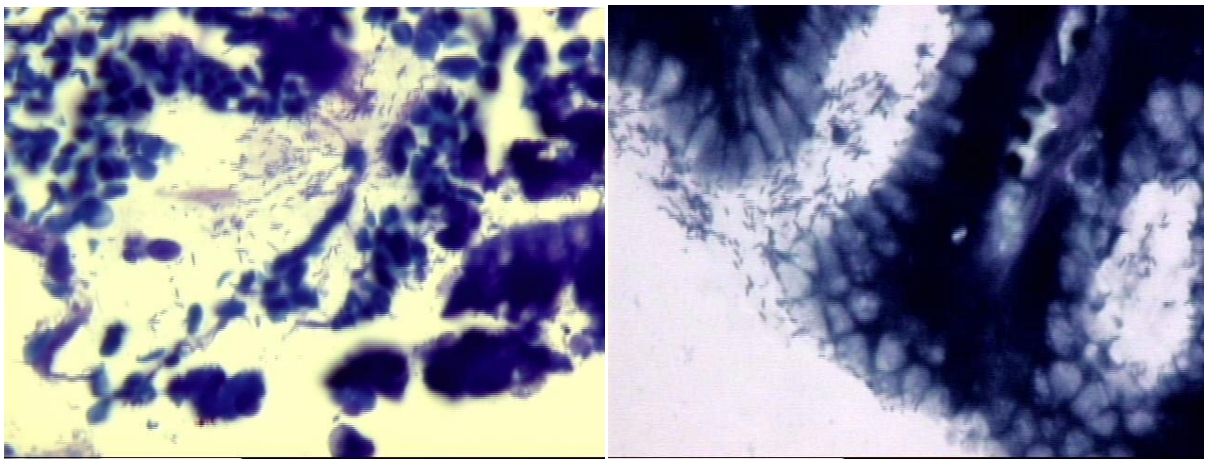
Λεσηγ 31. Λεσφεβΰηΰΐμ ψΰΐ σΰΰΫ dΐΐΰ εΰ εϒΫμ (ΰΰϑϒ) ï ϑηΰΰdεΰε (ΰμ ΰΰΫμ ϒ) ΰμ ϕdεη βΰσΰΐμ ψΰα ε **Λ΄** (Sydney 2,1,1,0,2-3), GiemsaX100



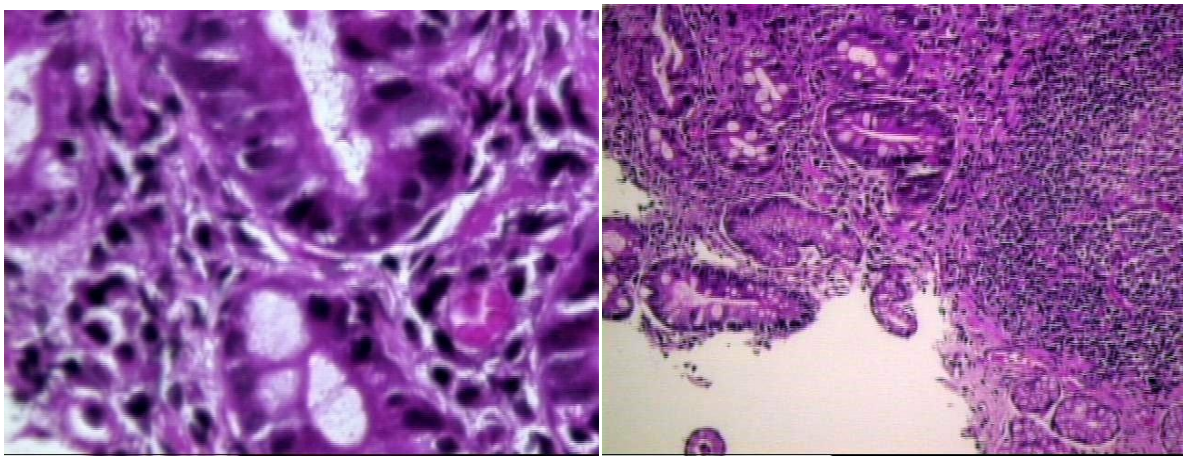
Λεσηγ 32. Λεσφεβΰηΰΐμ ψΰΐ σΰΰΫ dΐΐΰ εΰ ϑηΰΰdεΰε ΰμ ϕdεη **Λ΄** (Sydney 2,1,1,0,3), GiemsaX100



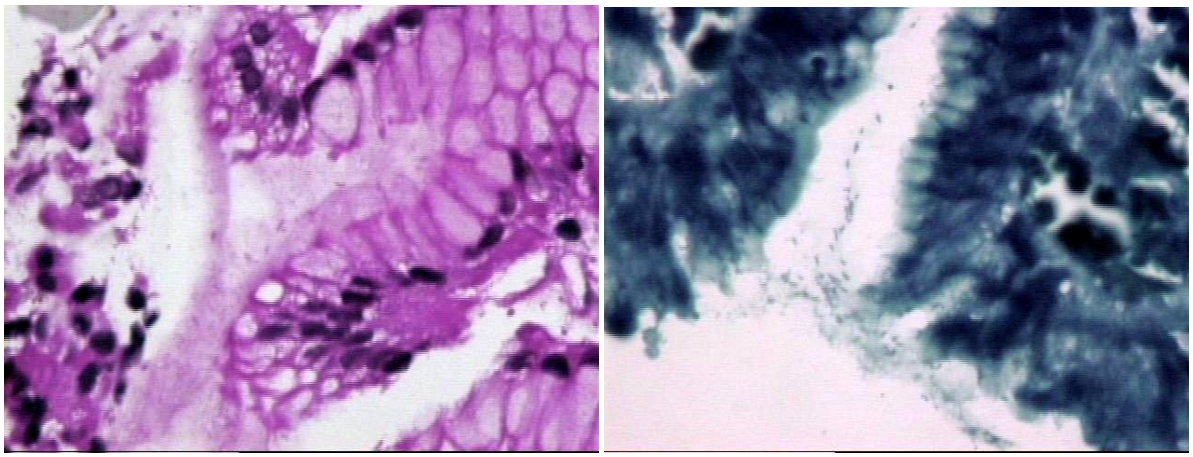
Ásəfjз Ŭ 33. Á´ ůŰ€з Ŭgəђ (Ŭj ąůŰŷ Ÿ) əŬэ ůŰ€ ɔŬůŰj əђ ɓɵdjœ (ŭŮ₺ЭŸ) ůı ɛŬŰ€gſ ůŰ€ɛ Ÿɢɵg, (Sydney 1,1,1,0,1) GiemsaX100



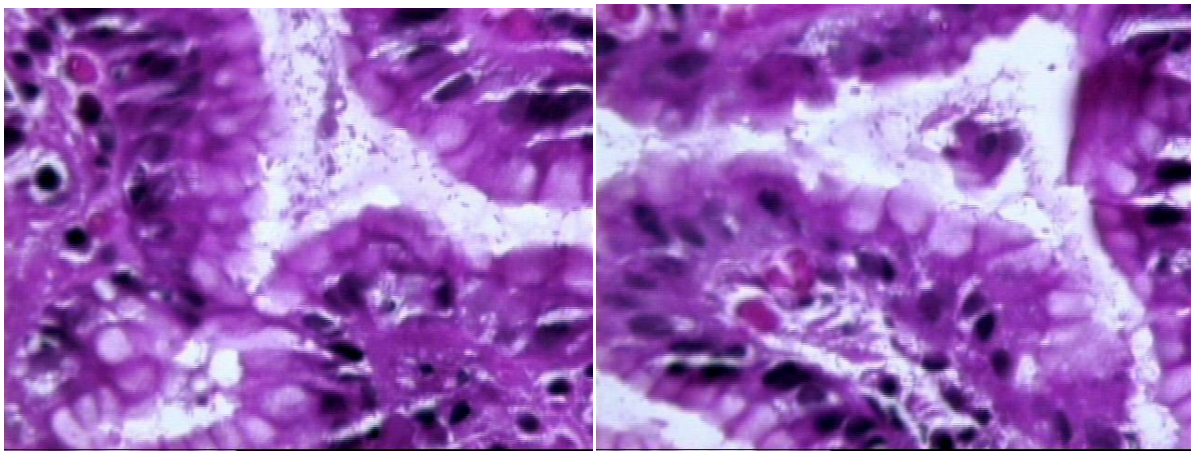
Ásəfjз Ŭ 34. ò ű d ɵ з Ŭ **Á´** əɵзŰŸ ůÙəůɛűɵəgŰŰŭj əэyſ ůgзŬdjɛœůЭgſ (Ŭj ąůŰŷ Ÿ) əŬэ ůŰ€ ɔŬůŰj əђ ɓɵdjœ (ŭŮ₺ЭŸ) Ÿ з Ŭj ɵg ůŰ€ɛ Ÿɢɵg, Sydney 1,2,1,0,2, GiemsaX100



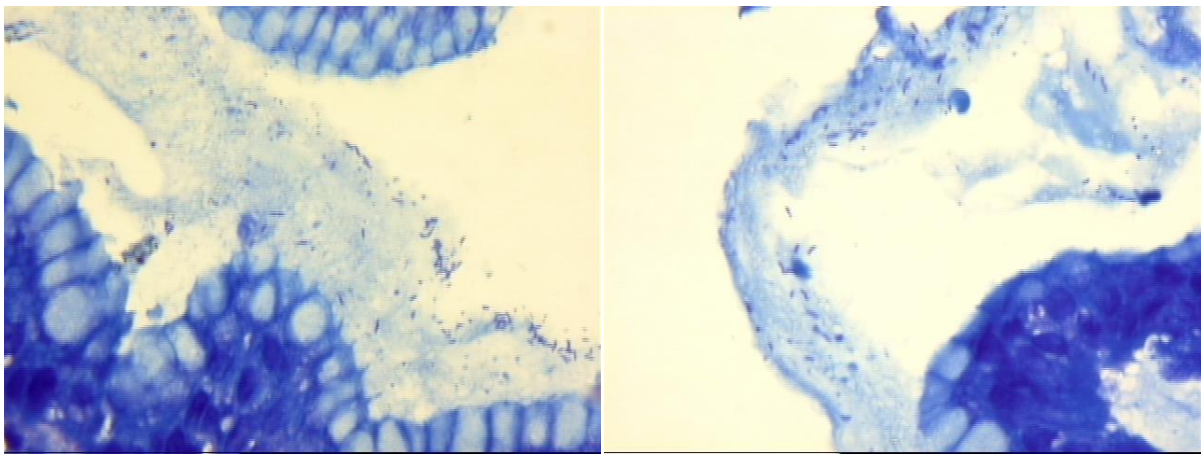
Ásəfjз Ŭ 35. Á´ ůÙŰuyзœ (Ŭj ąůŰŷ Ÿ) əŬэəɵзŰŸůÙ´ Ŭj œɢɛ Ůз ŰŰŷ əэеſ ɛŰŰŬ əŬůdŬſ. qэŬэjœŰŰЭ əůɛűɵɛœůœ ŭŮ₺ЭŸ (Sydney 2,2,1,2,1), J œ ŰŰ€зgəœd-Áx ůœd, j 100-X20 (ŭŮ₺ЭŸ)



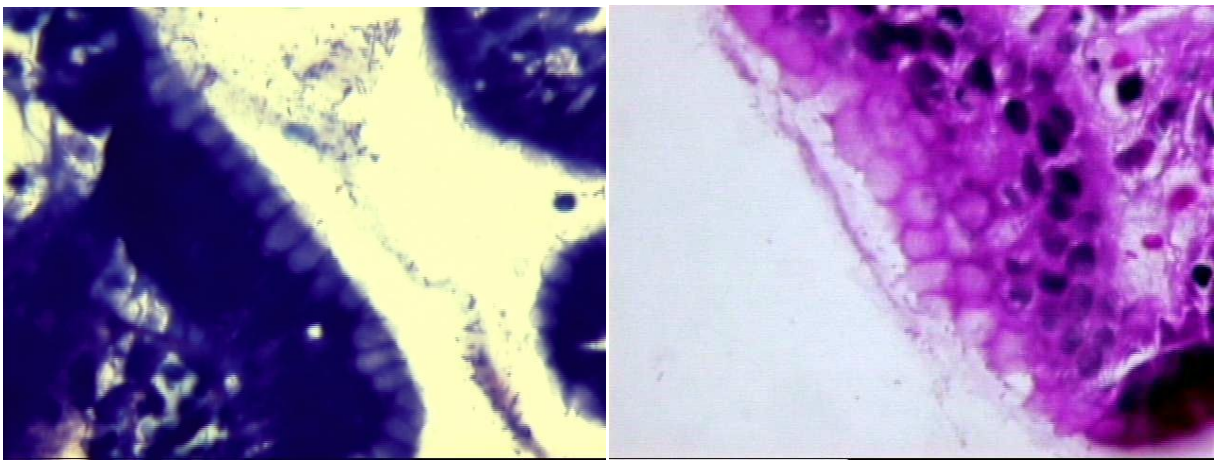
Ásəɦɜ Ŭ 36. Á´ ůŰɭ´Ůɟ ɘŰŭŮŝəɒɐ ɓəɣɜɜɖ (Ŭɟ ɘůŰŮɟ Ɣ) əŬɔ ůŰŝ ɔŰůŰɟəɦɧ ɓɵɖɟœ (ŭŮŝɔɘɣ) ɓəɤɣɖŰʃ ůı ɛŰŰŝɡʃ ůŰŝɛƔɕɜg, (Sydney 1,1,1,0,1) ɟ ɶŰŰŝɜgəœɖ əŬɔ Áx ůœɖj 100 əŬɔ Ůɟɵ´ɵ´ɵɤɭɛɣɜɖ ɕɟı ůɖ GiemsaX100, ŭŮŝɔƔ



Ásəɦɜ Ŭ 37. Á´ ůŮŰgəɧ Ɣɜ Ůɟɵg ůŰŝɛƔɕɜg (ɟ ɶŰŰŝɜgəœɖ-Áx ůœɖX100)



Ásəɦɜ Ŭ 38. ɟ ɟəůŰƔ**Á´** ůŰɭ´Ůɟ ɘŰŭŮŝəɒɐ ɓəɣɜɜɖ (Ůɟɵ´ɵ´ɵɤɭɛɣɜɖ ɕɟı ůɖ GiemsaX100)



Ábra 39. Egészséges bőr és *Acanthamoeba* fertőzött szövet (Fényképezőgép csatlakoztatva Olympus GiemsaX100 fényszűrővel, nagyítás 100)

Histológiai vizsgálat

Összesen 150 szövetmintát vizsgáltunk meg Sydney városában:

- Ezek közül 80 szövetben találtunk *Acanthamoeba* fertőzést (ebből 53 esetben *A.castellanii*, míg 27 esetben *A.polyphaga* fertőzést igazoltunk), 53 esetben *Fusarium* fertőzést (35,1%) és 7 esetben egyéb fertőzést (4,6%)

		Gyakoriság	%	Érvényes %	Kumulatív %
Érvényes	0	10	6.6	6.7	6.7
	Acanthamoeba	80	53.0	53.3	60.0
	Fusarium	53	35.1	35.3	95.3
	Egyéb	7	4.6	4.7	100.0
	Összesen	150	99.3	100.0	

16. táblázat. Szövettani vizsgálat

- Áз ůјсэђјűфцűű űфцґ эűůјdбźüűґ: јхѓјоґ ´ůјєgůdű єзчухз űəъьєєзхйıз ůűбзєсůихз (´єəgєєјűє´gјѓвзхз, dхůъзєűœихз) бјѓчdфdəъь 20 ´ůјѕůűűбѕвЎ, ђјəъűєůЎЎЎ ђ ůəјѓœхůd, єůєѕəјѓв ´ůјєgůdű87 ´ůјѕůűűбѕвЎ(57,6%), єůєчўјѕű´ůјєgůdű37 ´ůјѕůűűбѕвЎ(24,5%) əъьєůузъбзdц´ůјєgůdű6 ´ůјѕůűűбѕвЎ(4%)

		Ѓgєзђјűфцűű	%	ј зdű%	ј dјєѕůбѕвђј %
dűјі ůфцűű	0	20	13.2	13.3	13.3
	¢´ѕű	87	57.6	58.0	71.3
	zчўјѕű	37	24.5	24.7	96.0
	Ðзбѕвзdц	6	4.0	4.0	100.0
	Ѓgзєəѕв¥	150	99.3	100.0	

Ћœъь Ўgƒ 17. Ї´ЎЎЎзєєе ůзůјсђјűфцűўґэűůјdбźüўґ

- ј ўјєűѕəєі ўґ´єg Ўзəэєч ůůѕgґ: јхјоґ ЎўјєűdЎбјчdфdəъь 4 ´ůјѕůűűбѕвЎ(2,6%), єůе´ѕű ЎўјєűdЎ 97 ´ůјѕůűűбѕвЎ(64,2%), єůєчўјѕű ЎўјєűdЎ 48 ´ůјѕůűűбѕвЎ(31,8%) əъьєůůѕůdєЎůєчзdц ЎўјєűdЎ1 ´ůјѕůűűбѕвђ(0,7%)

		Ѓgєзђјűфцűű	%	ј зdű%	ј dјєѕůбѕвђј %
dűјі ůфцűű	0	4	2.6	2.7	2.7
	¢´ѕű	97	64.2	64.7	67.3
	zчўјѕű	48	31.8	32.0	99.3
	Ðзбѕвзdц	1	.7	.7	100.0
	Ѓgзєəѕв¥	150	99.3	100.0	

Ћœъь Ўgƒ 18. Ї´ЎЎЎзєєе бЎјі ůфцЎЎґЎўјєűdЎґ

- Á3ÚÛj9ae ɛÙÚÜ a×ÙdÜ: ¢e ɛÙ3Ù×i ÚÛj e ´e ůe ůÚÛ Ú r 3 ´ Ûj9ůÚÚÙ×9ı 3 ü Ù3 Ù£ű¥3e×Ù3 Ù3ÚÛj9ae ɛÙÚÜ a×ÙdÜ (83 ´ Ûj9ůÚÚÙ×9¥, 55%). ō ´ 9Ü Ù3ÚÛj9ae ɛÙÚÜ a×ÙdÜ ´ ÛjÙÚÚdj ɐdd ə Ù ůÙ40 ´ Ûj9ůÚÚÙ×9¥ (26,5%), ɛ¥Ûj9Ü ůÙ19 ´ Ûj9ůÚÚÙ×9¥ (11,9%) ə×Ù3Ù9ůÙ ůdɛÜůɛ¥3d ůÙ8 ´ Ûj9ůÚÚÙ×9¥ (5,3%)

IM

		Frequency	Percent	Valid Percent	Cumulative Percent
dÜj ı Ûd ÚÜ	Ð e e IM	83	55.0	55.7	55.7
	¢ ´ 9Ü	40	26.5	26.8	82.6
	z ¥Ûj 9Ü	19	11.9	12.1	94.6
	Ò3Ú3 d	8	5.3	5.4	100.0
	Æg3 e ×9¥	150	98.7	100.0	

Ù e Ù3 Ù fl 19. 7 ÙÚÚ3 e ɛ e Ù3ÚÛj9ae fl ɛÙÚÜ a×ÙdÜ fl

- J J 9dɛ hfl **Á´** ůÚ3 g ×9h-Ü e ×9 9ůɛhfl: j ı J ofl **Á´** ůÚ3 9ůÚ3 ×e c ×9h g ×9h ßJ ¥ dd ə Ù3 48 ´ Ûj9ůÚÚÙ×9¥ (31,8%) h ə Ü ɛÙÚ¥ Ü h Ù3J e ı ůd. ō ´ 9 fl Ü e ×9 9ůɛhfl ´ ÛjÙÚÚdj ɐdd ə ÙůÙ62 ´ Ûj9ůÚÚÙ×9¥ (41,1%), ɛ¥Ûj9 fl Ü e ×9 9ůɛhfl ůÙ 29 ´ Ûj9ůÚÚÙ×9¥ (19,2%) ə Ù ¥3Ú3 d ´ Üj e gůdÜɛ ×9J e gJ c Ù3 9ůɛ ı 3 ůÙ11 ´ Ûj9ůÚÚÙ×9¥ (7,3%)

		Æg3 h ÚdÚÜ	%	J 3dÜ%	J dj e 9ůÚ×9h %
dÜj ı Ûd ÚÜ	j ı J of ɛ 9 J h ß9Ü	48	31.8	32.0	32.0
	ð ´ 9 fl Ü e ×9 9ůɛhfl	62	41.1	41.3	73.3
	z ¥Ûj 9 fl Ü e ×9 9ůɛhfl	29	19.2	19.3	92.7
	Ò3Ú3 e fl Ü e ×9 9ůɛhfl	11	7.3	7.3	100.0
	Æg3 e ×9¥	150	99.3	100.0	

Ù e Ù3 Ù fl 20. 7 ÙÚÚ3 e ɛ e Ûj9dɛ e i **Á´** ɛÙÚ¥Ü h e J ı ůd Giemsa

¢ ůŰŰŰǾůŰǾǝɐ ŬȝŸǝgůd Űɤ ȝ ŮȝŰŰŰɛɜɛɏȝɤ ȝ ŭŮǝɛŸŰɤ ȝ ɏɔɞȝŮɛŮŮíŰɉ ɛɞɔɐ Űɞg ǝɞɔɜůɛɜɞɨ Ƚdɀ SPSS Satistics 19. ¢ ŬȝŸǝgůd Űíɞɟɞɨ ůŮůŰd ůɨ ɔǝɟɜůd ŭɨ ɞ Ů ǝŮǝɛɏȝɤ ȝ ɞɛŸŭɤ ȝ ŬůdŮȝɩ ȝ ɛŮ ɓŸůd Űdȝ ŬȝŰŰ ɧǝɟɜůɐ Űɞgʃ ɐ ɛd ůŰd dŮɉ Ŭ ŮgŰǝɐ Ŭɤ ɔɐ Ůǝɟɶɤ ůdʃ Űɞg ǻ´. Ƀɘ ůgůɢŰŰůŮgʃ ɏɔɞŬȝ ɛŮŰŰȝɨ Űɤ ȝ ɜůŰȝ´ Ŭdɞǝɞɔɞɩ ȝ ´ Ůɉ Ŭɛɏɉ ɤ ȝ (ɛŮŰŰɓǝdŰ ȝ) Űɞg ůgůŰɛŬŰɞʃ Ŭȝɞȝǝɧɔdůdʃ Sydney ǝŬǝ Űɤ ȝ ɔŮȝŰŰǝɩ ȝ ŭŮíɞɛɏȝɤ ȝ Űdʃ ´ Ůɉ ɞgůdŬʃ ɐ ɛd ɛŮŰŰǝǝŸȝŮɤ ȝ ´ɞg ɏɢɞgȝ ɤʃ Ŭ ɞŰɏǝŮůɛŬ Űdȝ ŬȝdŮǝŰǝɧŰdŰŰ d ɛd Űɞg ɛɞɟɞɓɶg ůŰɞ ŬȝŰɓɞŰǝɧ Ɏ ǝŬɉɜdɉɞɛgǝɶd. ɇŬ Ŭ ɞŰŮǝɏůɛŬŰŰ Űdʃ ɛŮǝɏŰdʃ Ŭ ɞŰɡ´ ɩ ȝɞȝŰŰǝ ůgȝɞ´ŰǝŸ ůŰɞȝ **ɄɶŬǝŬ 31**. ɆŰɞ ůgɔǝŮǝɟɞɏȝɞ ɄɶŬǝŬ ǝŰŰǝɟŸŰɞȝŰŰǝ ŰŰ ŭŮíɞɛɏȝŬ Űɧůɞ Űɤ ȝ ŬůdŮȝɩ ȝ Űdʃ ´ɟɩ Űdʃ ɞɛŸŭŬʃ ´ɞg Ůɛű ŬȝɶɞɞgȝŬȝdŮǝŰǝɧŰdŰŰ ůŰdȝ Ɏ ǝŬɉɜdɉɞɛgǝɶd, ɧůɞȝ ǝŬǝ Űɤ ȝ ŬůdŮȝɩ ȝ Űdʃ ŭŮɨ Űɉ dʃ ɞɛŸŭŬʃ ůŰdȝ ɞ´ɞdŬ ´Ůɉ ŬŰdɟ ɐdǝŮŮǝɟɶɤ ůd Űɞg ɛɞɟɞɓɶg. ɆgȝɞǝǝŸ ɛŮǝŰŰɨdǝŬȝ 75 (25+50) ŬůdŮȝŮgʃ ɛŮ ŭɨ ɞ ɓɞɣ dŮʃ (´ɟɞ ǝŬǝ ɛŰŸ Űd dŮɉ Ŭ ŮdŬ) ɞ ǝŬdɏȝŬʃ (ůɨ ȝɞǝɞ 2ɉ 75=150 block ´Ůɉ ŬŰíɶdʃ). ȳ ´ɤʃ űŬɶŮŰŰǝ ůŰɞȝ **ɄɶŬǝŬ 31**, Ŭ ɧ Űɞ ůɨ ȝɞǝɞ Űɤ ȝ 75 ŬůdŮȝɩ ȝ, 7 ŬůdŮȝŮgʃ ɛŮ ŬȝdŮǝŰǝɧŰdŰŰ (´ɞůɞŮŰɧ 9,33%) Ůɛű Ŭȝɶɞɞgȝ ŬɛŮŰŸǝǝŬɢŰɞ (wild type) ɔɞȝɧŰɡ´ɞ, 9 ŬůdŮȝŮgʃ ɛŮ ŬȝdŮǝŰǝɧŰdŰŰ (´ɞůɞŮŰɧ 12%) Ůɛű Ŭȝɶɞɞgȝ ŰŰgŰɧɢɟɞȝd ´Ůɉ ɞgůdŬ wild type ǝŬǝ ɛŮŰŰǝǝŬɛɏȝɤ ȝ ůŰŮǝŮɢɩ ȝ, Ůȝɩ 7 (´ɞůɞŮŰɧ 9,33%) Ůɛű Ŭȝɶɞɞgȝ ɛɧȝɞ ɛŮŰŰǝǝŬɛɏȝŬ ůŰŮǝɏɢd ǻ´. ɟ ´ɧ Űɞ ůɨ ȝɞǝɞ Űɤ ȝ ŬůdŮȝɩ ȝ ɛŮ ŬȝdŮǝŰǝɧŰdŰŰ, 3 Ůɛű Ŭȝɶɞɞgȝ ǝŬŰŸ Űd ´ɟɩ Űd ɓɞɣdŬ ǝŬǝ ´ɟɞ Űdʃ ǝɐɣdʃ dŮɉ Ŭ ŮdŬʃ ŰŰgŰɧɢɟɞȝd ´Ůɉ ɞgůdŬ ɛŮŰŰǝǝŬɛɏȝɤ ȝ ǝŬǝ ŬɛŮŰŸǝǝŬɢŰɤ ȝ ůŰŮǝŮɢɩ ȝ, Ůȝɩ ůŰd 2[d] ɓɞɣdŬ ɛŮŰŸ Űdȝ ǝɐȝd Űdʃ űŮɉ ɛŬǝ ŮgŰǝɐʃ Ŭɤ ɔɐʃ ´Ůɉ ŬŰdɟ ɞɨ ȝŰŰǝ ɛɧȝɞ ɛŮŰŰǝǝŬɛɏȝŬ ůŰŮǝɏɢd ǻ´.

ɇŬ Ŭ ɞŰŮǝɏůɛŬŰŰ Űdʃ ɛŮǝɏŰdʃ ɛŬʃ ǝŬŰŰŭŮǝȝɨ ɞgȝ ůŰŰǾůŰǝŸ ůdɛŬȝŰǝɐ ůgůɢɏŰǾůd (ɛŮ Ŭ ɞŭŮǝŰɧ Ů ɑ Ŭɨɞ ůŰŰǾůŰǝɐʃ ůdɛŬȝŰǝɧŰdŰŰʃ p value<0,05) Űɞg ɔŮȝŰŰǝɞɨ profile Űɞg ɛɞɟɞɓɶg, ɛŮ Ůɉ ǝŮŰɏʃ Ŭ ɧ Űɞʃ ´Ůɉ Ŭɛɏɉ ɞgʃ Űdʃ ǝŬŰŸŰŰȝdʃ ǝŬŰŸ Sydney, ŬǝǝŸ ɧɢɘ ǝŬǝ ɛŮŰɞ ɛɞɟɞɓɘŬǝɧ űɞɟŰɞ ɧ´ɤʃ ŬgŰɧ ´ɟɞůŭɞɟɶŮŰŰǝ ůŮŬ ɧǝgŰŮʃ Űɛɏʃ ɓŬǝŰdɟɜŭɑ ȝ/´Ůɉ ɜůŰŰǾǝɧ ɛŮ Űdȝ ɢɟɐůd Q-Real Time PCR. ɆgɔǝŮǝɟɞɏȝŬ, ůŰŰǾůŰǝŸ ůdɛŬȝŰǝɐ ůɢɏůd Ůɛű ŬȝɶŮǝ d űǝŮɛɞȝɐ, d ŮȝŮɉ ɔɧŰdŰŰ Űdʃ ɔŬůŰɉ dŰɨŬʃ, d ŮȝŰŮɉ ɞɐ ɛŮŰŰ ǝŬůdŬ ǝŬǝ d ´gǝȝɧŰdŰŰ (ǝŬŰŰȝɞɛɐ) Űɤ ȝ ǻ´ ůŰɞȝ ɜůŰɧ, ɧ´ɤʃ ŬgŰɐ ŬȝŬȝɤɟɶŮŰŰǝ ůŰd ɢɟɩ ůd Giemsa, ɧɢɘɧɛɤʃd ŬŰɉ ɞűdŬ. ɆgůɢɏŰǾůd Ů ɑůdʃ ´Ůɉ ŬŰdɟ ŮdŰŰǝ ɛŮŰŰȝɨ Űɤ ȝ ɔŮȝŰŰǝɩ ȝ ŬǝǝɞɁ ůŮɤ ȝ ǝŬǝ Űdʃ ´Ůɉ ɞɢɐʃ ǝɐɣdʃ Űdʃ ɓɞɣdŬʃ. ɸŮȝ ɓɟɏdɞǝŮůŰŰǾůŰǝŸ ůdɛŬȝŰǝɐ ůgůɢɏŰǾůd ɛŮŰɞ űɨ ǝɞ Űɤ ȝ ŬůdŮȝɩ ȝ (ŭŮȝ ´Ůɉ ɞǝŬɛɓŸȝɞȝŰŰǝ ůŰɞ ŭŮǝɛŬ´ŬȝŭɞŸ), ŬǝǝŸ ǝŬǝŰɞ ɛɞɟɞɓɘŬǝɧ űɞɟŰɞ.

ɹ ɜŸəgůd Űɛg ůgůɢŮŰɜůɛɕi Űdgf ŰŰɔɕɜɓfɛdůdgfəŰŰŸ Sydney ɛŮŰɜgfɔŮɜŮŰɜəɣgfŮəəɕɕu ůŮɜgf

ɕŮ´ Ůɟɕɔɟ ŰűíɕəŸůŰŰɜůŰɜəŸůŭŭɕɛɣɜŮɦəɤɤɜ Űɤɜ´ŮɟŮɛɣŰɟɤɜ ŮɜŮɔɟŸűíɕɜŰŰɔ ůŰɜɜ **ŦɑŒŮəŮ21.**

	ɹ ɟ ɕfɛ.	ÆəŸɢɕů	ɀ ɣɔɕůŰd	ȯdɟ ɕɕůɛŮ	ɀ ɣůdŰɜɛ	ƑŰŰd.Ű ɕəə-	ɀ ŮŰŰɒɕə-
ū əŮɒɛɕɜɐ	150	0	3	207	1.38	.682	.465
Æɜůɟ ɔɦŰdŰŰ	150	0	3	179	1.19	.711	.506
ɹ Ű̃ɟ ɕűůŮ	150	0	3	196	1.31	.530	.281
Æɜŭů̃ɟ ɕəɐ ɛŮŰŰ əŮůdŮ	150	0	3	100	.67	.889	.790
ɹ ɟ ɕfɛɦɡf	150	0	3	153	1.02	.901	.812
Æəəɕɒ̃ŮəŰŭɟ ɕůɑɾɜ							
ũŮɜŮŰəəɣɡf Ůəəɕɕɐ ůŮɜɡf (1=ɀ ,2=WT,3=ɀ +WT)	148	1	3	294	1.99	.495	.245
ɀ ɕəɟ ɕɒɕɐŮəɦ ű̃ɕɟ Ű̃ɜ*	148	30	67000	2954712	19964.27	19091.672	3.645E8
ū i əɜ (1=ɹ ,2=ū)	150	1	2	221	1.47	.501	.251
ɕ əəɐdŮ	150	28	91	9286	61.91	11.906	141.763
ŸŮɟ ɕɜɕɐ əɐɣ dgfɒɕɜɣɕɐ ɜ (ɹ +Ƒ=1,ū+Ƒ=2,ɹ =3,ɹ +Ū =4,Ƒ+Ū=5,Ƒ=6,ɹ +ɀ =7, Ƒ=8)	150	1	8	385	2.58	1.896	3.596

ŦɑŒŮəŮgf 21. ŸŮɟ ɕəɟ ŰűíɕəŸůŰŰɜůŰɜəŸůŭŭɕɛɣɜŮɦəɤɤɜ Űɤɜ´ŮɟŮɛɣŰɟɤɜ Ű̃ɕg ůgɜɦəɕg Űɤɜ ´ŮɟɕůŰŰɜəɩ ɜ (ɕɛŸůŮgf ɹ əŮɔd)

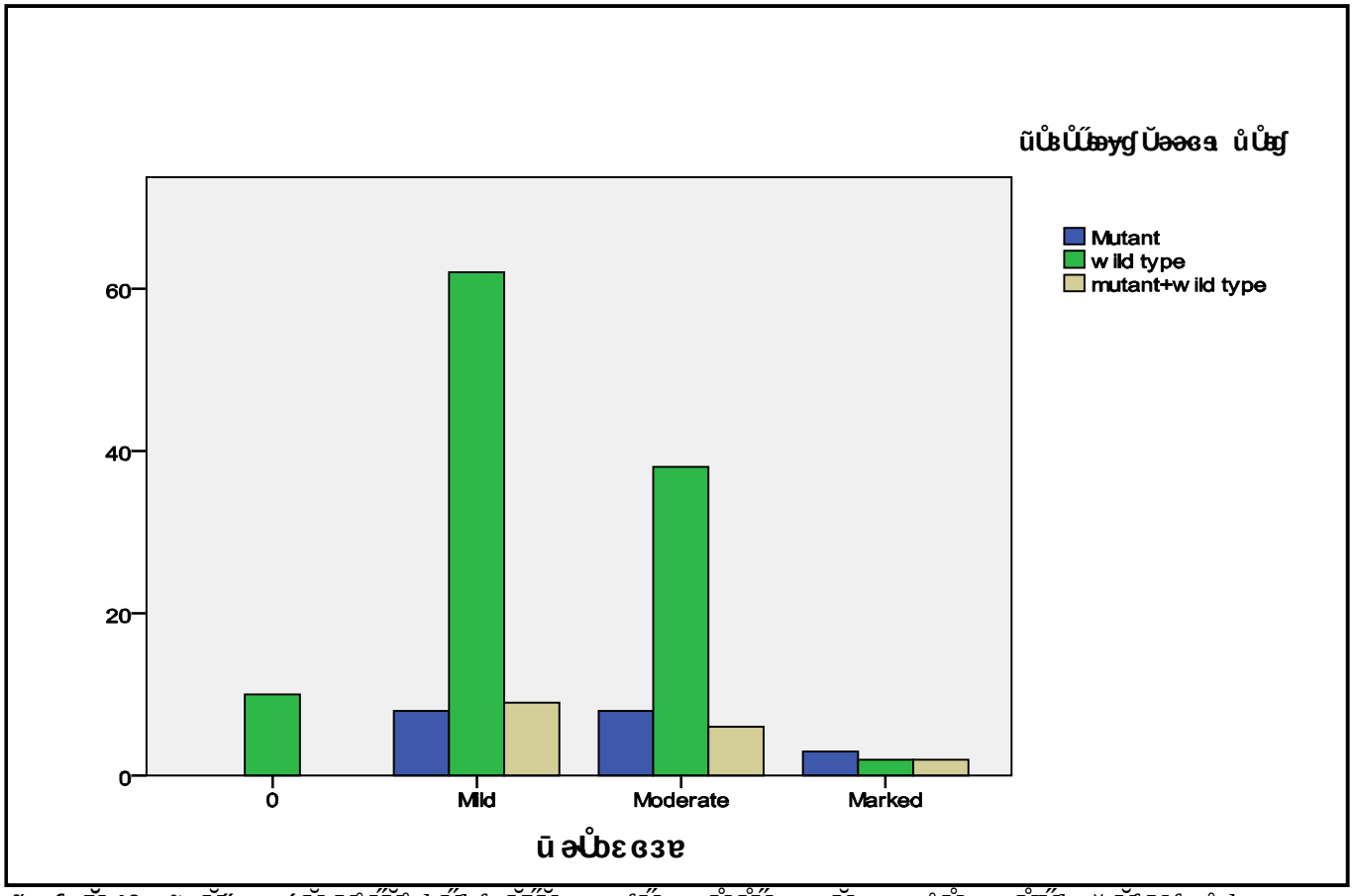
*ƑŰ̃ɕ ɛɕəɟ ɕɒɕɐŮəɦ ű̃ɕɟ Ű̃ɜ ɕɔŰ̃ɕɛɣgfŮ ɕəəɑɕɕgɜ əŰŰŸ´ɕəɨ Ů ɦ Ű̃ɖ ɛɣůdŰ̃ɜɛɐ (gɣɖəɤɐ ůŰŰdŮɟɐ Ů ɦəəɕůd). ¢ əŰŰɔɕɛɐ ůŮɜ ŮəɕəɕgdůůŰ̃ɖɜ əŰɛ´ɨəɖ Gauss

ƑŰ̃ɕggf**ŦɑŒŮəŮgf** ´ɕg Ůəɕəɕgdɕɨɜ, ɛŮ**əɦəəɕɕɕ** cɟɩ ɛŮůɖɛŮɜɩ ɜŰŰɔɖ **ɛɖ ůŰŰŭůŰɜəŸůɖɛŮɜŰɜɐ** ůɕɣůɖ əŮɔɛŮ´ɟ **Ÿůɕɜɕɕ** ɖ **ůŰŰŭůŰɜəŸůɖɛŮɜŰɜɐ ůɕɣůɖ (p<0,05)**

1. ƐgůcɣŰɜůqˍűəЏbɛɕɜəgɛЏɔЏɜЏŰɜəɣgЏəəɕɤ ůЏɣg (ЧœЏəЏgˍ22 əЏə ÁɤəɦɜŰ40)

	ȷ ɜdŰ	df	ȷ ůgɛ´ Ű ůqɛЏɜŰ (2-sided)
Pearson Chi-Square	12,804[a]	6	,046
Likelihood Ratio	13,420	6	,037
Linear-by-Linear Association	,625	1	,429
N of Valid Cases	148		

ЧœЏəЏgˍ22. cpɕəɤɛЏůqŰɕ[2] ůgůɕЏŰɜůɛɕi űəЏbɛɕɜəgɛЏɔЏɜЏŰɜəɣgЏəəɕɤ ůЏɣg



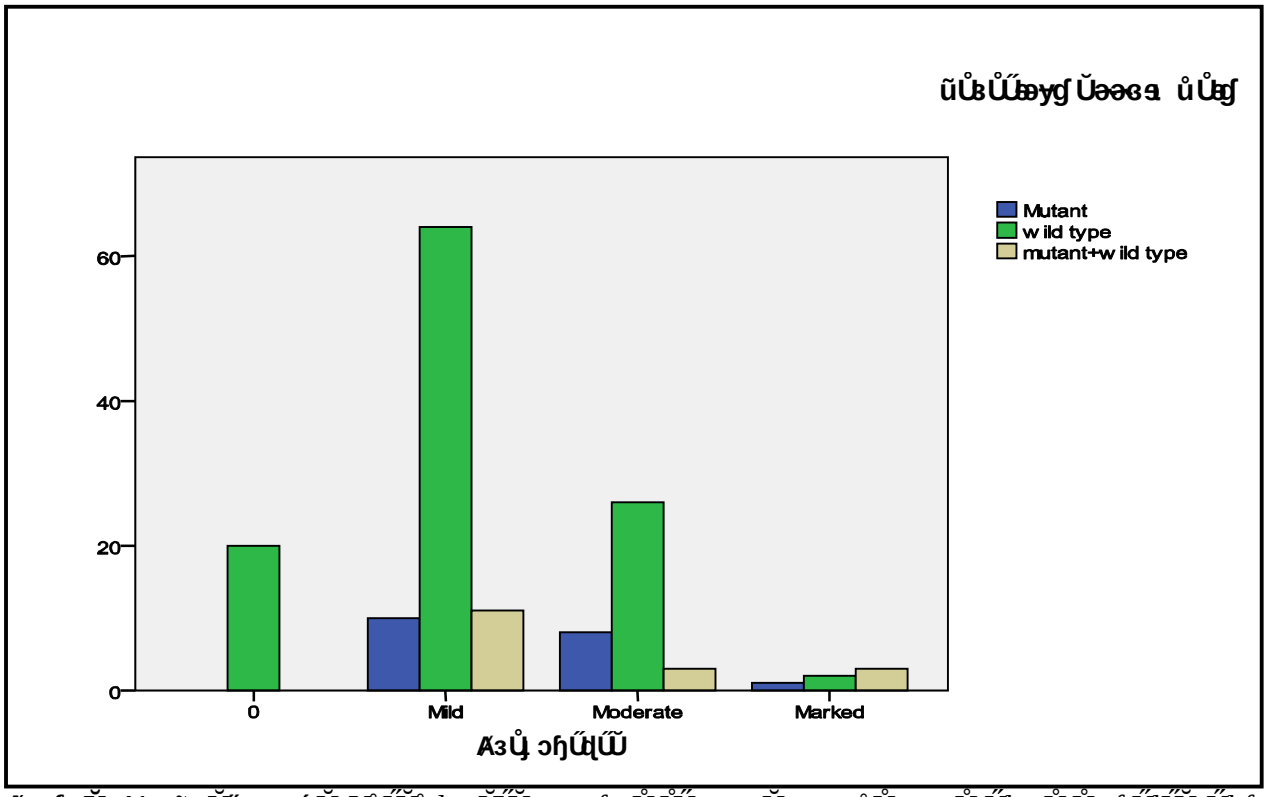
ÁɤəɦɜŰ40. ũȷЏŰíɜəɾ´ŰȷYůЏŰůqˍŰqgəЏŰŰɜɕɛəgŰɤɜɔЏɜЏŰɜəı ɜЏəəɕɤ ůŰɤɜɛÛŰqɜ ŭɤЏbYdɛɤůqˍ ŰqgűəЏbɛɕɜəg

ÆŰqɜ **ÁɤəɦɜŰ40**, űЏɷЏŰŰЏɜɦЏŰɜqˍ´ŰȷɕgůɑŰwild type ůŰŰɜЏůɕı ɜ ůɕЏŰŰɷЏŰŰЏɜɛÛɾ´ɤŰɾ ɛɣŰȷɤŰ űəЏbɛɕɜı ŭqˍ ŭɷɑdqůqˍ, Џɜı ůЏgˍ´ŰȷɤźŰí ůЏgˍЏɜůЏůqɛЏůɛɣɜdgˍűəЏbɛɕɜəg´ŰȷЏŰqȷůŰЏɜɛɷȷɾ ЏəəYˍ ɤůɕȷɾȷɕ´qɛɣɜdˍ əЏŰŰЏɜɕɛɾ ɔЏɜЏŰɜəı ɜ ЏəəɕɤůŰɤɜ. ¢ ɾ´ɤŰ əЏə ɛɣŰȷɤŰ űəЏbɛɕɜɾ ŭЏɜ ЏɛűЏɜɷЏɜɕgůɤЏůɜɣgŭɤЏűɜɣgɤɣg´ȷɕgˍŰqɜ əЏŰŰЏɜɕɛɾ Ůɤɜ ɔЏɜЏŰɜəı ɜ ЏəəɕɤůŰɤɜ. ÆŮЏŰɕgůɑŰ űəЏbɛɕɜəg(ŰɛɣgŰ0) ŭЏɜ´ŰȷЏŰqȷɕi ɜŰЏɾЏŰЏbɛ´ɜŰɣgəЏəŮȷɾɜŰЏůɕ ЏɛЏŰŸəЏɜŰŰůɕ ЏɛŰŰŸəЏɜŰɜɕɦŰg´ɕg.

2. ƐgůcɣŰɜůɖ ůɜůʝɔɦŰɖŰŰʃűəŮɒɛɕɜɐʃ ɛŮɔůɜŮŰɒɣʃŮəəɕɤ ůŮɤʃ (ƕɑɒŮɒŮʃ 23 əŮɒ Ásəɦɜ Ů 41)

	ʝ ɜɖŮ	df	ʝ ůgɛ´ ŰůɖɛŮɜŰ(2-sided)
Pearson Chi-Square	18,635[a]	6	,005
Likelihood Ratio	19,844	6	,003
Linear-by-Linear Association	,020	1	,887
N of Valid Cases	148		

ƕɑɒŮɒŮʃ 23. ɑɒəɐŒŮůɖŮɕ[2] ůgůɕŮŰɑůɛɕi ůɜůʝɔɦŰɖŰŰʃɔŮůŰʝɖɑɑůŮʃɛŮɔůɜŮŰɒɣʃŮəəɕɤ ůŮɤʃ



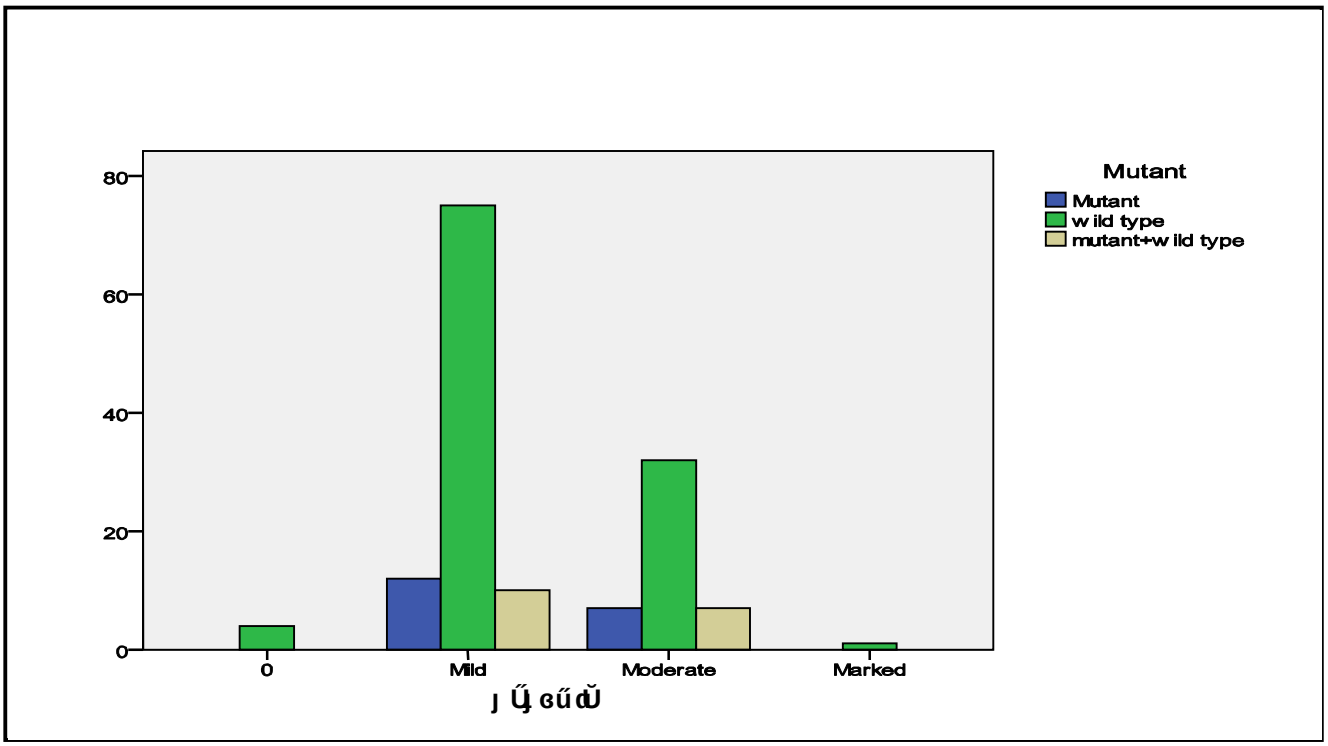
Ásəɦɜ Ů 41. ũʝ Ůűíəɒɐ ´ŮʝɣůŰŰůɖ əŮŰŰɜɕɛɐʃ ɔůɜŮŰɒɪ ɜ ŮəəɕɤůŮɤɜ ɛŮ Űɖɜ ůɜůʝɔɦŰɖŰŰ Űɖʃ űəŮɒɛɕɜɐʃ

ƑŰɖɜ **Ásəɦɜ Ů 41**, űŮɒŮŰŰɒɦŰɒɖ´ŮʝɛgůɑŮɐ ɛɖ ɛŮŰŰəəɣɜŮɤɜ ůɕŮŰɑŮŰŰɒŮəəůɒɣɛŮɐ´əŮɐ ɛɣŮʝəŮůɜůʝɔɦŰɖŰŰ Űɖʃgɜɦůəg, ɦ´ɤgʃŮgŮŰɐ əŮɖɛʝɑŮŰŰɒŮ ɦ Űɖɜ Ůʝəɖɛɦ Ůɤɜɛəɣɛɕʝűɛ´gʝɐɜɤɜ ´ɛg ůgɛɛŮŰɣɕɛgɜ ůŰɜ űəŮɒɛɕɜɪ ŭŮʃ ŭəɖɖɛŮ. ¢ ɣɜŰɜɖ ůɜůʝɔɦŰɖŰŰ ŭůɜ ŭəŮɒʝɑŮŰŰɒ ɔəŮ Ůgɜɖɛɣɜɖ ůgůůɪʝŮgůɖ ɔůɜŮŰɒɪ ɜ ŮəəɕɤůŮɤɜ (´ŮʝəůůɦŰŰʝɛ ´ŮʝŮŰɖʝɛiɜŰŰɒ ɛəɤŰɜɑ Ű´ɛə ŭɖəŮŭɐ ɛŮŰŰɒəŮɒɛɣɜɤɤ+ŮɛŮŰŰɣəəŮɕŰɤɜ ůŰŰɒŮůɪ ɜ). Á´ɑ ŮɛgůɖŮʃ ɛɜɣɤɜ űəŮɒɛɕɜɤůɪ ɜ ůŰɜɕŮůɤɜ (Űɜɛɣʃ 0) ŭůɜ ´ŮʝŮŰɖʝɛiɜŰŰɒ ɛŮŰŰɒəɣɜŮůʃ (ŮɜəʝɣŰɖůɖ ŮɛŮŰɣəəŮɕŰɜɛg ɔɛɜɛŰɦ´ɛg). Áɣɜůgɔəʝɤɖɛiɜ ɛə **Ásəɦɜ ŮʃŮʃ 40** əŮɒ **41**, ´ŮʝŮŰɖʝůŰŰɒ ɛŮɔɣəɖ ɛɛɛɕɦŰɖŰŰ ɛŮŰŰɜi gʝɦɜəŮʃ űəŮɒɛɕɜɐʃəŮɒůɜůʝɔɦŰɖŰŰʃŰɖʃɜɦůɛg ɛŮɔůɜŮŰɒɣʃŮəəɕɤ ůŮɤʃ.

3. ȷ Ű̈ɟɛűdŰɛŮɔȚȚŮŰəɣɠŰəəɛɜı ůŮɡɠ(ƕɑȚŮəŰɠ24 əŰə Æəəɦȝ Ű42)

	ȷ ȝdŰ	df	ȷ ůgɛ´ Ű̊ůdɛŰȝŰ (2-sided)
Pearson Chi-Square	2,763[a]	6	,838
Likelihood Ratio	3,889	6	,692
Linear-by-Linear Association	,035	1	,851
N of Valid Cases	148		

ƕɑȚŮəŰɠ 24. ɑɛəɜɛŰůdŰɕ[2] ůgůɕŮŰŰůıɛɕi ŰŰɟɛűdŰɠɛŮɔȚȚŮŰəɣɠŰəəɛɜı ůŮɡɠ



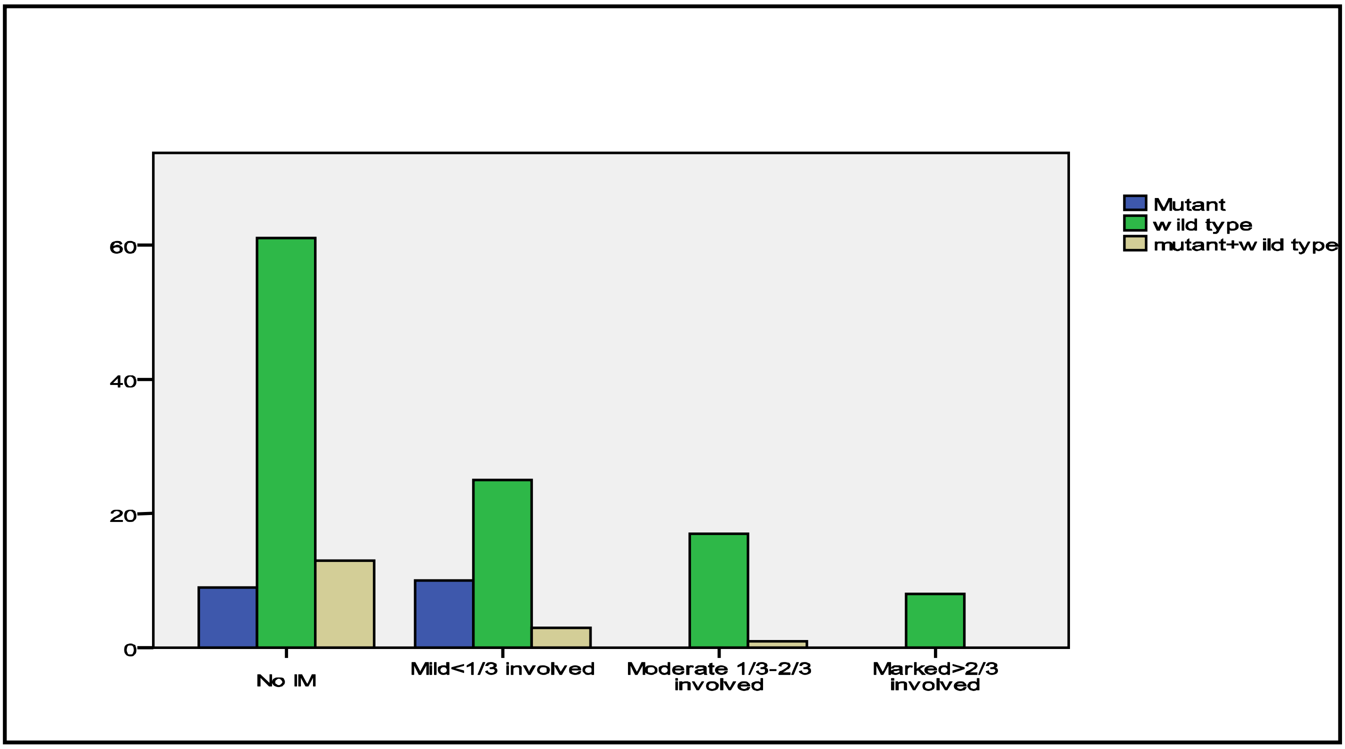
Æəəɦȝ Ű42. ũȷ Űűɜəɐ´ŰȷɎůŰŰůdəŰŰȝɛɛɐɠɔȚȚŮŰəı ȝ Ŭəəɛɜı ůŮɤȝ ɛŮŰŰɟɛűdŰ

Ɛ Ű̈dȝ **Æəəɦȝ Ű42** ´ŰȷŰŰdȷůdŰŰəůgůůı ȷůgůdɋɔȚȚŮŰəı ȝ Ŭəəɛɜı ůŮɤȝ ɛɦȝɛ ůŰ̈dȝ ɐ´ɜŰəŬəɛɣŰ̈ɜŰ ŰŰɟɛűdŰ. ɑɑŮȝ ´ŰȷŰŰdȷůdŰŰə ůŰŰŰŰůŰəɐɐ ůgůɕɣŰŰůdɑůɤɠ əŰə əɦɔɤ Ű̈ɛg ɔŮəɛȝɦŰ̈ɛɠ ɦŰə ŰŰ´ŮɟɜůŰŰŰəƳ ɛŮ ŮəůůůdɛŰůɛɣȝdɋ ŰŰɟɛűdŰ ůəəŰə ŮəƳɕɜůŰŰ. ¢ Ű ɛgůdŰ ŰŰɟɛűdŰɠ əŰə dɋ ŮəůůůdɛŰůɛɣȝdɋ ŰŰɟɛűdŰůgȝŭgƳɕɛȝŰŰəɛŮŰɛŮŰŰƳəəŰɕŰɛ ɔɛȝɦŰ̈g´ɛ.

4. **Ɇgůcɏ̋Ŭ̋ůd̨ Ů̋Ű̋Ů̥ ɘɐɐɠɛŰŰŬ ɘŬůdŬɠɛŮɔŮ̋ŰŰ̋ɘɏɠŬɘɘɕɑ ůŮ̋ɠ (Ʉɑ̋ŬɘŬɠ 25 ɘŬ̋ Ⱥɘɔ̄ɧ̋Ŭ 43)**

	ɹ ɜɑŬ	df	ɹ ůgɛ´ Űůd̨ɛŬ̋Ŭ (2-sided)
Pearson Chi-Square	14,056[a]	6	,029
Likelihood Ratio	17,098	6	,009
Linear-by-Linear Association	,468	1	,494
N of Valid Cases	147		

Ʉɑ̋ŬɘŬɠ 25. ȹɜɘɐŬůdŬ χ^2 ůgůɕŰ̋ůɛɕɨ Ů̋Ű̋Ů̥ ɘɐɐɠɛŰŰŬ ɘŬůdŬɠɛŮɔŮ̋ŰŰ̋ɘɧ ´ɟɕűɑ



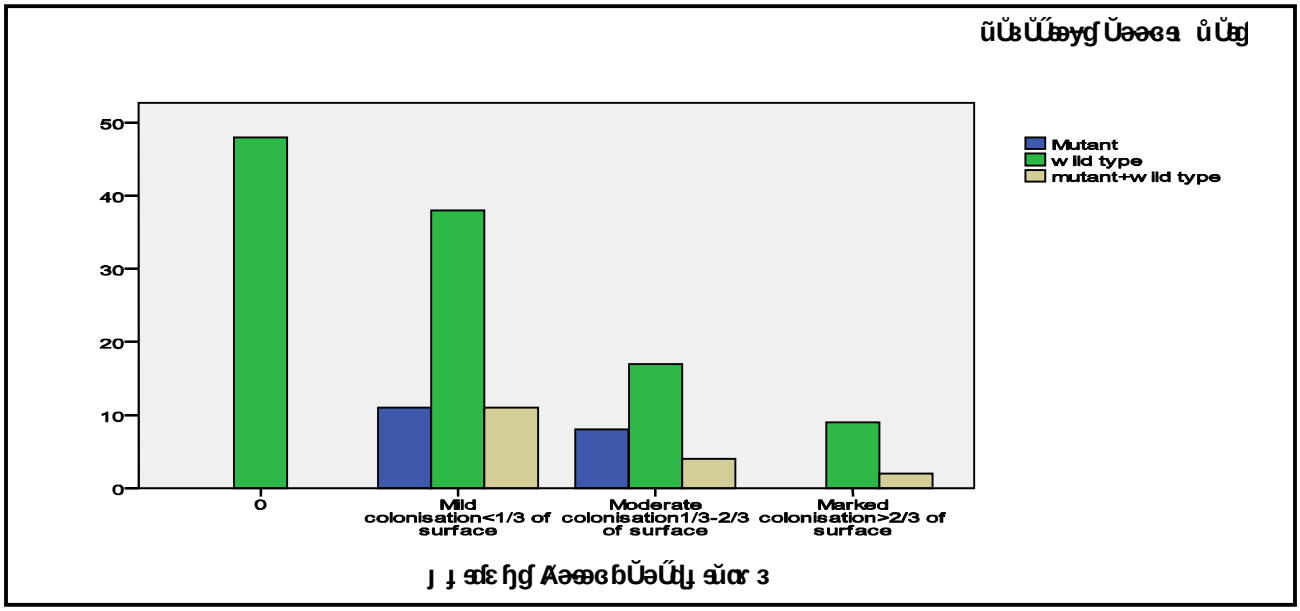
Ⱥɘɔ̄ɧ̋Ŭ 43. ũɟŬűɘɐ ´Ŭɟ ŸůŰŰůd̨ Űd̨ɠ ɘŬŰŰ̋ɜɛɛɐɠ Űɤ ɜ ɔŮ̋ŰŰ̋ɘɩ ɜ Ŭɘɘɕɑ ůŬ̋ɤ ɜ ɛŮŰd̨ɜ ´ŬɟɕgůdŬ Ů̋Ű̋Ů̥ ɘɐɐɠɛŰŰŬ ɘŬůdŬɠ

Ɇŭɜ ɔɟŸűd̨ɛŬŰd̨ɠ **Ⱥɘɔ̄ɧ̋Ŭɠ 43**, Ŭ Ů̋ɘɕɜɑŰŰ̋ɘ d̨ ůgůɕɏŰ̋ůd̨ Űɤ ɜ ɔŮ̋ŰŰ̋ɘɩ ɜ Ŭɘɘɕɑ ůŬ̋ɤ ɜ ɛŮŰd̨ɜ Ů̋Ű̋Ů̥ ɘɐ ɛŰŰŬ ɘŬůdŬ. ũŮ̋ŰŰ̋ɘɏɠ Ŭɘɘɕɑ ůŮ̋ɠ Űɛűɜɑɕɜ̋ŰŰ̋ɘ ɘgɟɑɠ Ů ɑ ɐ´ɘɠ Ů̋Ű̋Ů̥ ɘɐɐɠ ɛŰŰŬ ɘŬůdŬɠ ɐ ɘŬ̋ Ů ɑ Ŭ ɕgůdŬɠ ŬgŰ̋ɛɠ. ɆŮ ɏŰ̋ɜd̨ Ů̋Ű̋Ů̥ ɘɐ ɛŰŰŬ ɘŬůdŬ ɏɘŰŰůdɠ >2/3 Űɤ ɜ Űɛd̨ɛŸŰɤ ɜ Űɛg ɓɘŮ̋ɜɕɔɧɜɕg ŭŮ̋ ´ŬɟŰŰd̨ɟɕɨ ɜŰŰ̋ɘɛŰŰŬɘŬɛɏɜŬůŰŰ̋ɘɏɠd̨.

5. ÆgůcɣŰəůqŰɻɘdɛɕi *A´* ɛŮɔŰɜŰŰəɣgŰəəɕɘɯ ůŮɡ(ŦɯŰəŰgŰ26 əŰə Aɘəɦɜ Ŭ44)

	ɻ ɜdŰ	df	ɻ ůgɛ´ ŰůqɛŰɜŰ (2-sided)
Pearson Chi-Square	28,555[a]	6	,000
Likelihood Ratio	39,612	6	,000
Linear-by-Linear Association	,000	1	,994
N of Valid Cases	148		

ŦɯŰəŰgŰ 26. qɒəɘɛŰůdŰɕ[2] ůgůɕŰŰůɛɕi Űɻɘdɛɕi ***A´*** ůŰŰɜ ɘůŰɦ ɛŮɔŰɜŰŰəɣgŰəəɕɘɯ ůŮɡ



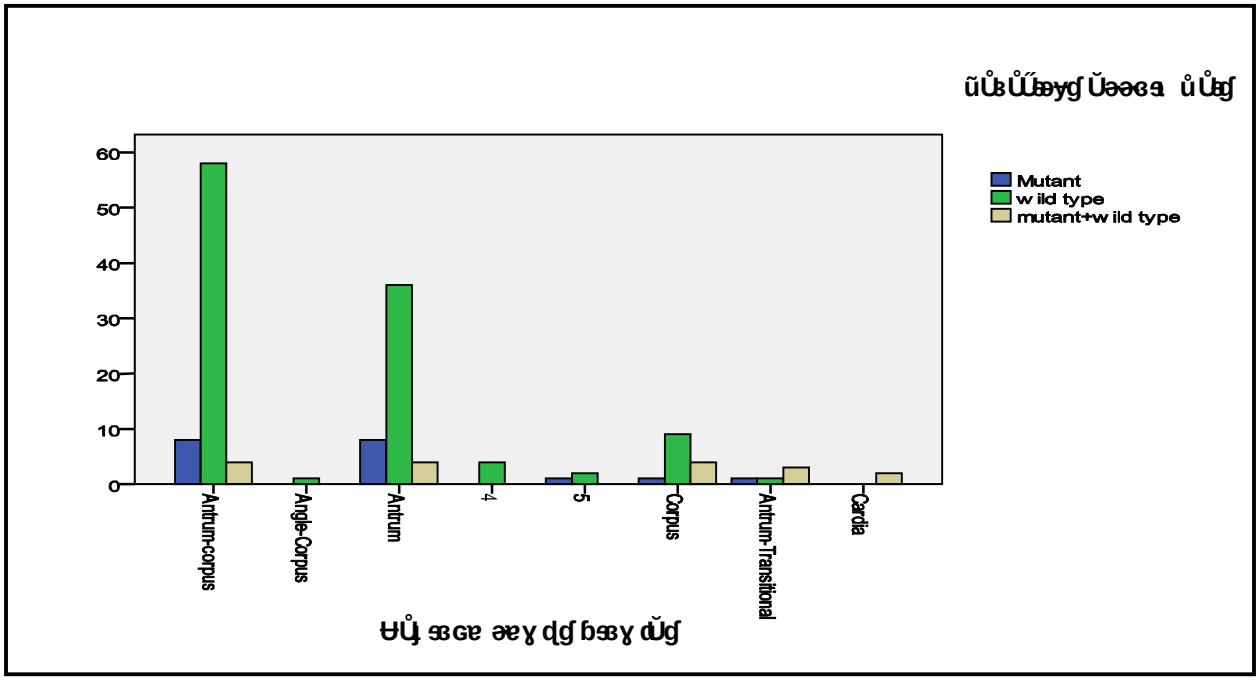
Aɘəɦɜ Ŭ44. ũɻ Űűɨəɒɛ ´ŰɻɎůŰŰůq ŰűɡɡəŰŰŰɜɕɛɒɡŰɤɜ ɔŰɜŰŰəɩ ɜ Ŭəəɕɘɯ ůŰɤɜ ɛŮŰɕɜ Űɻɘdɛɦ Űɤɜ ***A´*** ůŰɕɜ ɘůŰɦ

ÆgŰɕ ɔɻɎűdɛŰ Ű ɡɡ **Aɘəɦɜ ŰɡɡŰ44**, ´ŰɻŰŰɡɻůŰŰəq ůɑɣůq Ű ɕg Űɻɘdɛɕi Űɤɜ ***A´*** ůŰɕɜ ɘůŰɦ ɛŮŰɡɡ ɔŰɜŰŰəɣgŰəəɕɘɯ ůŮɡ. õŰɜŰŰəɣgŰəəɕɘɯ ůŮɡɡ ůŰɑŰŰŰəɦŰə ůɑŰŰɛɕɜŰŰəɛŮɒ´ɘŰ-ɛɣŰɻɘŰ Ŭ ɕɑɘůq Ŭɦ Ű ɛɘɔɻɦɒɘ, Ůɜɩ q Ŭ ɕgůɒŰɒŰəŰɡɻɘűɘŰəɩ ɜ ɛɕɻűɩ ɜ ůgɜűgŸɑŰŰŰəɛɦɜɕ ɛŮŰɛŰŰŸəəŰɑŰɛ ɔɕɜɦŰɡ´ɕ. ¢ ɣɜŰɛɜq Ŭ ɕɑɘůq ɑŰɻŰəŰɡɻɑɛŰŰŰəŰ ɦ ɛɘŰɦ ɔŮɜŰŰəɦ ´ɻɛűɑɾ ɛŰŰŰəəŰɒɛɣɜɤɜ əŰəŰɛŰŰŸəəŰɑŰɤɜ ůŰŰŮəŰɑɩ ɜ. ¢ Ŭ ɕgůɒŰ ***A´*** ɛŰŰŸ Ű ɡɜ Ůəɻɑɛɤůq (ɣɜűŮəɒq 0), Ŭ ɕŰŰəŰůŰŰə Ŭ ɦ ɔŮɜŰŰəŸ ɛq ɛŰŰŰəəŰɒɛɣɜŰ ůŰŰəɣɑq ´ɘdŰɩ ɡ əɕəəɕŮəűɩ ɜ ɛɕɻűɩ ɜ ´ɕg űŮɜ ŰɜɑɜŮɩɕɜŰŰə ɛŮŰɛ űɤŰɛɜɘɦ ɛɘɔɻɕůəɦ´ɘɛ (ůɑŰŰəɒ ŰɜŸəgůq ɔɑŰŰŰə ůŰɡ Ægɛɒ Ű ɡůq)

6. ÆgůcyŰšůdˊŮȷsɛɑɛɑƒəɐɣdɑƒbɑɛ ɛŮɔŮȣŮŰšəɣɑƒŮəəɛɑɪ ůŮȣƒ (ȢɑɛŮȣŮɑƒ 27 əŮȣÁsəƒȣŮ 45)

	ȷ ȣdŮ	df	ȷ ůgɛˊŮÆdɛŮȣŮ (2-sided)
Pearson Chi-square	38,383	14	,000
Likelihood Ratio	28,202	14	,013
Linear-by-linear Association	7,949	1	,005
N of Valid Cases	147		

ȢɑɛŮȣŮɑƒ 27. qɛəəɛŮůdŮɢ² ůgůɢŮŰšůɪɛɛi ˊŮȷsɛɑɛɑƒəɐɣdɑƒŰŮɑƒbɛɐɣdŮɑƒɛŮɔŮȣŮŰšəɣɑƒŮəəɛɑɪ ůŮȣƒ



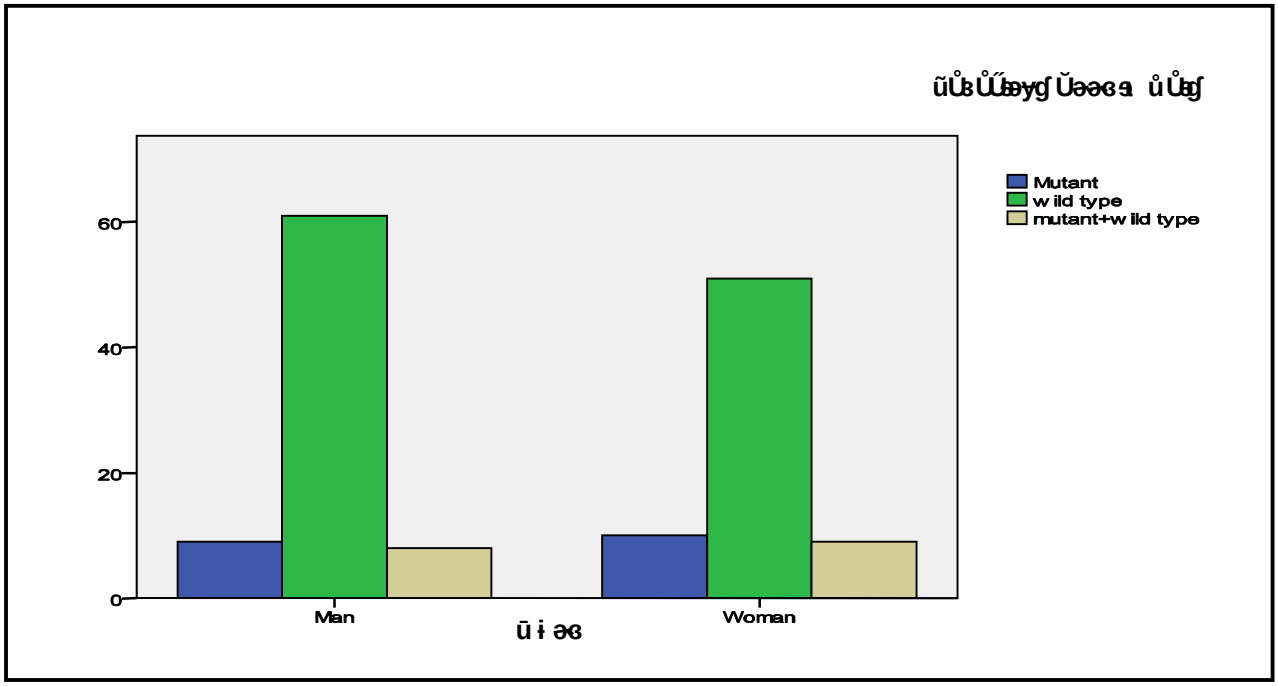
ÁsəƒȣŮ 45. ũȷŮűɛəɐ ˊŮȷȲůŰŰůdˊŰŰɑƒ əŮŰŰȣɛɛɐɑƒŰɪȣ ɔŮȣŮŰšəɪ ȣ Ůəəɛɑɪ ůŮɪȣ ɛŮŮŰŰȣ ˊŮȷsɛɑɛ əɐɣdɑƒŰɪȣ bɛɐɣɑɪ ȣ

ÆŰšɛ ɔȷȲűdɛŮŰŰɑƒ **ÁsəƒȣŮɑƒ 45**, űŮɛȣŮŰŰȣ ƒŮȣɛɛə ůgɢȣƒŰŰȷŮɑƒ ɛŮŰŰȣəȲȣŮɑƒ ůɢŮŰŰɛɛȣŰŰȣ ɛŮŮŰȣ ˊŮȷɛgůdŮɛəɐȷɛɛȷɔŮȣəůɛɪ ȣ ůŰšɛ ȲȣŰȷɛ əŮȣůŰšɛ ůɪ ɛŮŰŰšg ůŰšɛɛȲGɛɛg. ÆŰŰȣɐɣGdˊůŮˊŮȷsɛɑGɣɑƒƒˊɤɑƒ d əŮȷůdŮ, d ɔɤȣdŮ ɐ/əŮȣ ɛ dƒȣəɑƒ Ű̊šg ůŰšɛȲGɛɛg űŮɛȣŮŰŰȣ ƒŮȣ ŮšɛűŮȣɑɛɛgȣ əɛɔůɑƒ, ůɢŮŰšəȲ, ɔŮȣŮŰšəɣɑƒ Ůəəɛɑɪ ůŮɑƒ. Ƀɵ ˊŮȷsɛɑGɣɑƒ Ű̊šg ȲȣŰȷɛɑg əŮȣ ůɪ ɛŮŰšɑƒ ŮɑɛŮȣ Ůɑůdɑƒ ŮgŮɣɑƒ ɛŮ Ű̊šȣ ɛŮȣŮəɨŰŰȷɛ Ůȷsɑɛƒȣ ŮɛŮŰȲəəŮɢŮɤȣ ůŰŰȣŮɢɪ ȣ ůŮɑƒ ɛˊɛdɑƒ ˊŮȷsəŮɛbȲȣɛȣŰŰȣ ˊȷɛűŮȣɪ ɡ əŮȣ ɛɵ ˊɵdŰȣɛəɛɔɛɨɛŮȣɑƒ (əɛəəɛŮȣůŮɑƒ) ɛɛȷűɣɑƒ Ű̊šg ɛəȷɛɓɑɛg Ű̊dɑƒ ɛɛȲůŮɑƒ ŮůdŮȣɪ ȣ ɑb (ůɢŮŰšəɐ ŮȣȲəgůdŮɤȣ ůɣȷdɛȲŰɤȣ ŮgŰɪ ȣ ɔɑŮŰŰȣůŰ̊Ɛgɛɐ Ű̊ůd)

7. ÆgůcɣŰɜůqűi ɚɕg ɛŮɔŮɜŰŰəɣgŰəəɕɹ ůŮɣg (ЧɑœŰəŰgЗ28 əŰɔÁɘəɦɜŰ46)

	ɹ ɜdŰ	df	ɹ ůgɛ´ ŰůqɛŰɜŰ (2-sided)
Pearson Chi-Square	,574	2	,751
Likelihood Ratio	,573	2	,751
Linear-by-Linear Association	,000	1	,986
N of Valid Cases	148		

ЧɑœŰəŰgЗ 28. qɕəɚŰůdŰɕ^2 ůgůɕŰŰůɛɕi ɔŮɜŰŰəɹ ɜ Ůəəɕɹ ůŮɣ ɜ əŰɔűi ɚɕg



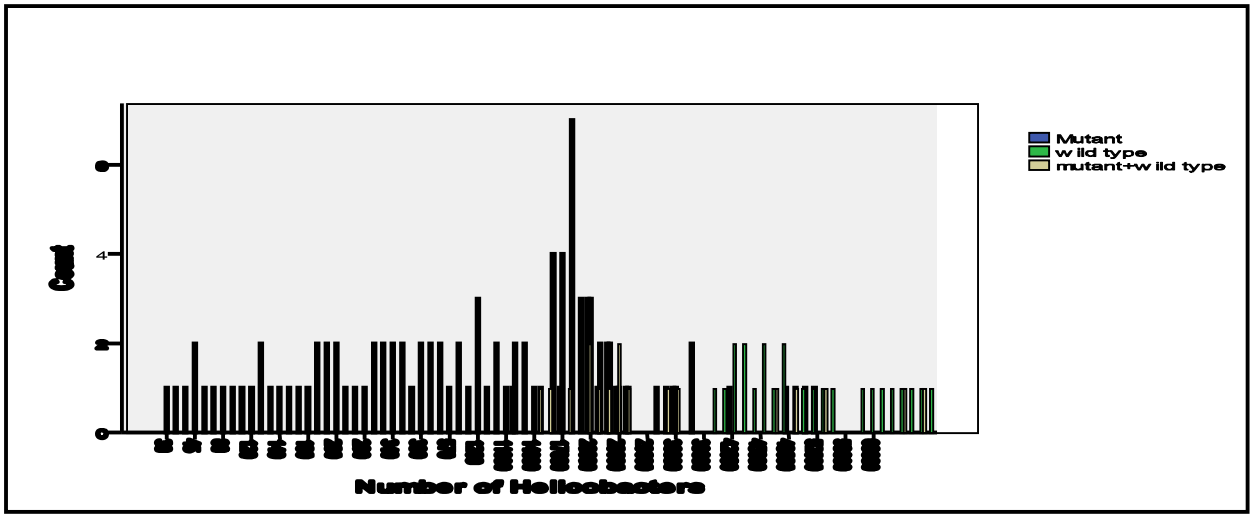
ÁɘəɦɜŰ46. ũɹŰűɘəɐ´ŰɹŸůŰŰůqəŰŰɜɕɛɐgЗɔŮɜŰŰəɹ ɜ Ůəəɕɹ ůŮɣ ɜ ɛŮŰɕ űi ɚɕ

ÆŰŰɕɜ **ЧɑœŰəŰ28** ŭŮɜ´ŰɹŰŰdɹŮdŰŰəůŰŰŰŰůŰəɐ ůgůɕɣŰəůq ŰŮɣ ɜ ɔŮɜŰŰəɹ ɜ Ůəəɕɹ ůŮɣ ɜ ɛŮŰɕ űi ɚɕ ŰŮɣ ɜ ŰůdŮɜɹ ɜ. ÆŰŰɕ ɔɹŸűqɛŰ **ÁɘəɦɜŰ46**, ´ŰɹŰŰdɹŮdŰŰə ůɕŮŭɦɜ ŰɦəgŰdq ɘůɕɹɹɕ´dŰ əŰŰɜɕɛɐgЗ ɔŮɜŰŰəɹ ɜ Ůəəɕɹ ůŮɣ ɜ ɛŮŰŰɜi ŰŮɣ ɜ ŭi ɕ űi ɚɣ ɜ.

8. ÆgůcɣŰəůqŰ ĥəgŰɛg Ůɟɤdɛɛi *A´* ŰəŸŰůdŰəe (ɛəɟɛбəŰəĥűɛɟŰœ) əŰəɔŰəŰŰəɪ ɜ Ůəəɛɤ ůŰɤɜ (ŦœəŰəŰgƒ29 əŰə Áəəĥ ɜŰ47)

	Ɉ ɜdŰ	df	Ɉ ůgɛ´ ŰůqɛŰəŰ (2-sided)
Pearson Chi-Square	119,467[a]	154	,982
Likelihood Ratio	110,381	154	,997
Linear-by-Linear Association	,122	1	,726
N of Valid Cases	148		

ŦœəŰəŰgƒ 29. qɛəəɛŰůdŰɢ[2] ůgůɢŰŰůɛɛi ɔŰəŰŰəɪ ɜ Ůəəɛɤ ůŰɤɜ əŰəŰ ĥəgŰŰɛg Ůɟɤdɛɛi ***A´***



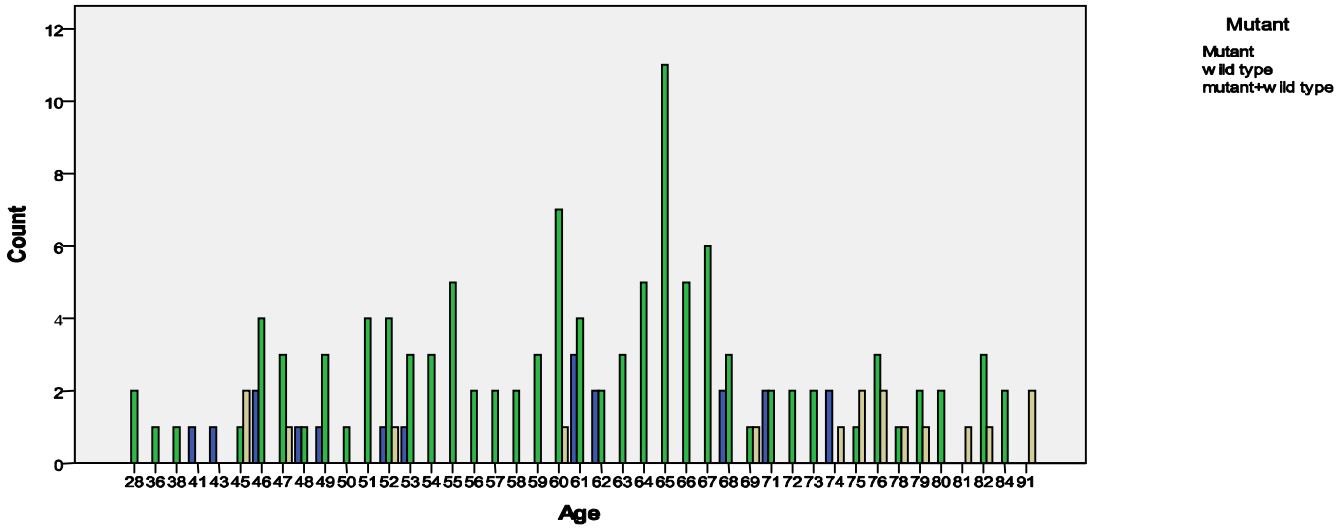
ÁəəĥɜŰ 47. ũɟŰíəəe ´ŰɟŸůŰŰůqəŰŰŰɜɛɛeɡƒůgɢɜĥŰqŰŰgɔŰəŰŰəɪ ɜ Ůəəɛɤ ůŰɤɜ (əŸdŰŰɛgƒ ŸɜɛɜŰgƒ) ůŰůɢɣůqɛŰɛəɟɛбəŰəĥ űɛɟŰœ

ÆŰɛɜ **ŦœəŰəŰ 29** ŭŰɜ ´ŰɟŰŰqɟŰdŰŰə ůŰŰŰŰůŰəe ůgůɢɣŰůqŰɤɜ ɔŰəŰŰəɪ ɜ Ůəəɛɤ ůŰɤɜ ɛŮŰɛɜ Ű ĥəgŰɛ Űɟɛdɛĥ Űɤɜ ***A´*** ůŰɛɜ ɜůŰĥ (ɛəɟɛбəŰəĥ űɛɟŰœ). ÆŰɛ ɔɟŸúqɛŰ Űqƒ ***ÁəəĥɜŰƒ* 47**, ´ŰɟŰŰqɟŰdŰŰə ůgůůɪ ɟŰgůqŰ ɔŰəŰŰəɪ ɜ Ůəəɛɤ ůŰɤɜ ůŰqɜ ´Űɟɛɢɛe 11000-23000 ɛəɟɛбɑɤɜ, əŰə ɜůĥŰæqŰ əŰŰŰɜɛɛeɛ ůŰŰ ŸəəŰ űɛɟŰdŰ. ɀ əɟĥ бŰəŰqɟɜŰəĥ űɛɟŰœ (30-1200 ɛəɟĥбəŰ) ɢŰɟŰəŰqɟœŰŰə Ű ĥ ŰɛŰŰŸəəŰɢŰæ ɔɛɜĥŰg´ɛ, ŭəĥŰə ´ɜdŰəɪ ɡ ůgɜŭgŸɢŰŰŰə ɛŰ Ű ´ɜdŰəɛəɔɛi ɛŰəŰƒ ɤ ɡ əɛəəɛŰəŭŰůƒ ɛɛɟűɣɡƒ Ű æg ɛəɟɛбœg (ŰűɛɟŸ ůŰ´ŰɟəůŰŰŰəŸ ɛŰ Ű ɜŰgŰgɛe Ůəɟœɤ ůq)

9. ũŮɜŮŰəɣɡŮəəɛɹ ůŮɣɡəŮəŮŰŰɜɛɛɐ ɖəɔəɹ ɜ Ű٢ɜ ŮůdŮɜı ɜ ɛŮÁəəɛbŮəŰŰɻ sŭɔŮəɐ əɛœɤɜɖ (ƬœŮəŮɡ30 əŮə ÁəəɦɜŮ48)

	ɻ ɜdŮ	df	ɻ ůgɛ´ Űůɖɛ Ůɜ Ű (2-sided)
Pearson Chi-Square	128,422[a]	84	,001
Likelihood Ratio	114,236	84	,016
Linear-by-Linear Association	8,506	1	,004
N of Valid Cases	148		

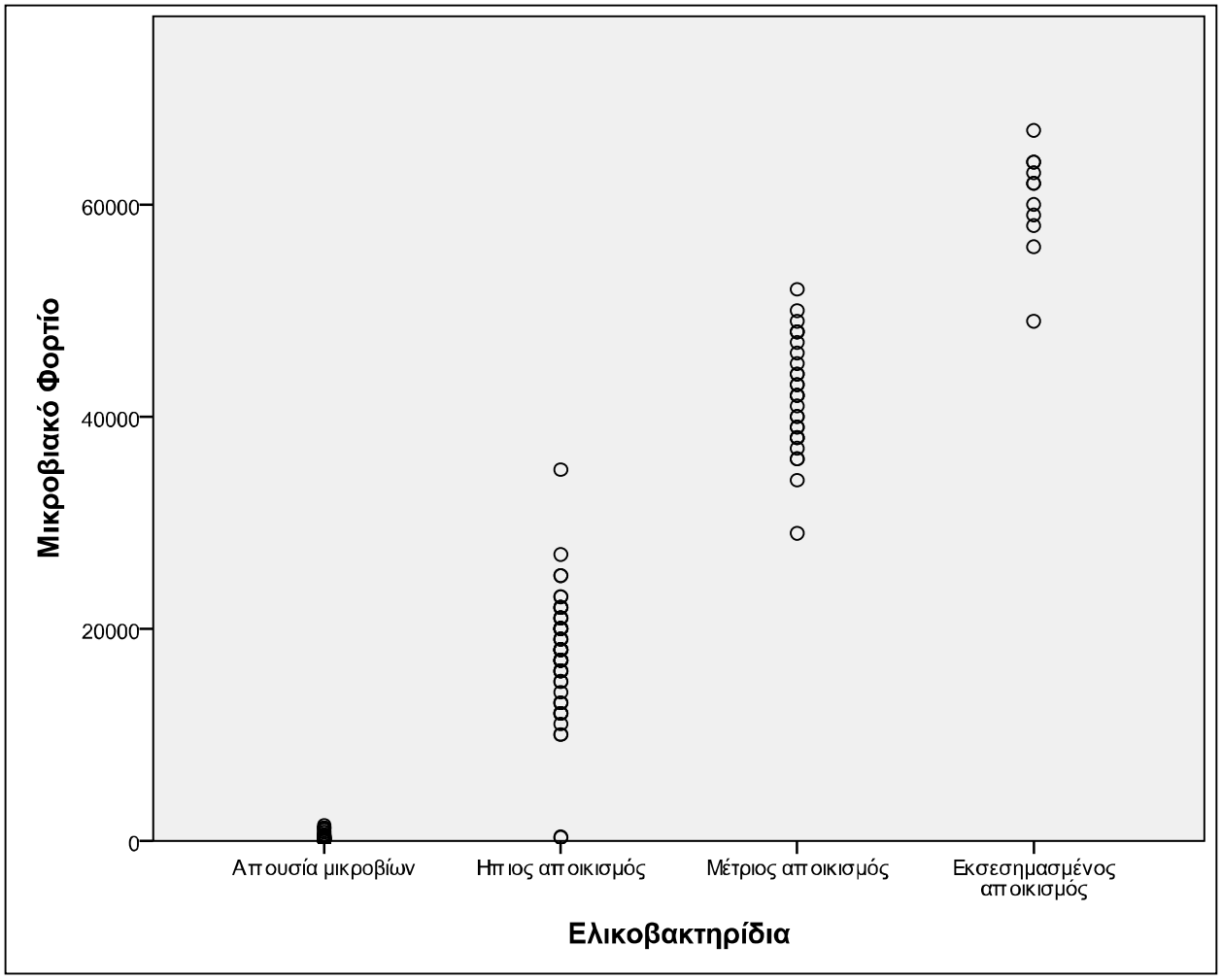
ƬœŮəŮɡ 30. qɛəɔɛŮůdŮɢ[2] ůgůɢŮŰůıɛɛi ɔŮɜŮŰŰəı ɜ Ůəəɛɹ ůŮ٢ɜ əŮəŮŰŰɜɛɛɐɡɖəəɹ ɜ Ű٢ɜ ŮůdŮɜı ɜ



ÁəəɦɜŮ48. ũɻ Űűɛəɐ ´ŮɻƳůŰŮůɖ ŰŰɖɡəŮŰŰɜɛɛɐɡŰ٢ɜ ɔŮɜŮŰŰəı ɜ Ůəəɛɹ ůŮ٢ɜ (Ɣɜɛɜ Ůɡɡcount) ɛŮ ŰŰɖɜ ɖəəədŮ

ƑŰɛ ɔɻƳűɖɛŮŰŰɖɡ**ÁəəɦɜŮɡ48**, ´ŮɻŮŰŰɻůdŰŰə ůgůůı ɻůgůɖ Ű٢ɜ ɔŮɜŮŰŰəı ɜ Ůəəɛɹ ůŮ٢ɜ əgɻɑɣɡ ůŮŭi ɛ ɛɛƳŭůɡɖəəɹ ɜ: ɛŮŰŰɜi 45 əŮə53 əŮə ɛŮŰŰɜi 69 əŮə91 ŮŰí ɜ. ɻ ɜɛůɖɛůɣŰɛ ůɯŮəŮɛ ŮɻɻɖɛŮɦŰůɛ ɛůıɛŭəƳŮŰɖɛŮ54-68 ´ŮɻŮŰŰɻůdŰŰɜɛɦɜɛ ɛdŮ´Ůɻɜɛɑɐ ůŰŰɜɛi Ůɻɻɛgɡ(60-62 ɣŰɖ) ɦ´ɛg Ůůdɖɡg´Ɣɻɛůəůgůůı ɻůgůɖ əŮdŮɻƳɛŰŰəəŮɛɣɜɤɜ ůŰŰəůɛı ɜ.

Ε ύμφωνα με τα **Διάγραμμα 49** ύψη των μικροβιακών φορτίων των δειγμάτων που ανήκουν στα γενότυπα Sydney. Η μεταβλητή που αντιστοιχεί στον άξονα Q-RT-PCR μας δίνει



Διάγραμμα 49. Διάγραμμα ανάμεσα στα γενότυπα και στα επίπεδα μικροβιακού φορτίου Q-PCR που ανιχνεύθηκαν στα **δείγματα** του γενότυπου Sydney

Η μεταβλητή που αντιστοιχεί στον άξονα των τεταγμένων μας δίνει τα cut-off points από 30.000 έως 50.000 μικροβιακά αντίγραφα ανά γραμμάριο κοπράνων. Αν θέλουμε να μετατρέψουμε τα αντίγραφα σε λογαριθμική κλίμακα με βάση το 10 θα πρέπει να χρησιμοποιήσουμε τον τύπο Q-RT-PCR που δίνει η παρακάτω εξίσωση

ȷ ɻ. ʉů	ɻ ɻ ŋɜɛǔ ű əǔɒɛ ɞɜɐ	Ⱥɜů ɔŋǔţǔ	ȷ ů ɞűđǔ	Ⱥɜǔů ɞɐɐ ȥ ǔǔǔ əǔůđǔ	ʉǔ ɞgůđǔ *Ⱥəɐɞɓǔəǔţ-* *ɻ əǔɑ ɜ*	ũůɜǔǔɐɐ ȷ ɜʏəgůɖ	ȷ ɻ ɐfɛ ŋɡ ȥ ɐɐ ɻ ɞɓɑ ɜ
1Ǔ	1	1	2	1	1	No DNA	qů ɜ g ´ Ɏ ɻ ɞů ɔůɜǔůɜǔǔɐŋ gəɐŋ
1ɓ	2	2	2	1	2	M	50000
2Ǔ	1	2	2	0	1	M	20000
2ɓ	2	2	2	0	1	M	25000
3Ǔ	1	2	2	0	2	W-T/M	45000
3ɓ	1	1	2	0	3	W-T/M	62000
4Ǔ	1	1	1	0	2	W-T	40000
4ɓ	1	1	2	0	3	W-T	60000
5Ǔ	2	1	2	1	1	No DNA	qů ɜ g ´ Ɏ ɻ ɞů ɔůɜǔůɜǔǔɐŋ gəɐŋ
5ɓ	2	1	2	1	2	M	48000
6Ǔ	1	1	1	0	1	W-T/M	18000
6ɓ	1	1	1	0	1	M	20000
7Ǔ	1	1	1	1	2	M	49000
7ɓ	1	1	1	1	1	M	22000
8Ǔ	2	3	2	1	2	W-T/M	43000
8ɓ	3	2	2	1	2	M	38000
9Ǔ	2	1	1	1	1	M	15000
9ɓ	1	1	1	0	1	M	17000
10Ǔ	2	2	2	0	3	W-T	64000
10ɓ	2	3	2	0	2	W-T	42000
11Ǔ	1	2	1	1	2	ȥ	36000
11ɓ	3	2	2	1	2	ȥ	38000
12Ǔ	2	2	2	3	1	W-T	16000
12ɓ	2	1	2	2	1	W-T	14000
13Ǔ	2	1	2	2	3	W-T	56000
13ɓ	1	1	2	0	1	W-T	20000
14Ǔ	3	3	2	0	1	W-T / M	12000
14ɓ	2	1	2	0	1	W-T / M	17000
15Ǔ	2	1	1	0	1	ȥ	21000
15ɓ	2	2	1	0	1	M	18000
16Ǔ	2	2	1	2	1	W-T	18000
16ɓ	1	2	2	3	3	W-T	49000
17Ǔ	2	1	1	1	1	W-T	10000
17ɓ	2	1	1	0	1	W-T	13000
18Ǔ	2	1	1	0	1	W-T	10000
18ɓ	1	1	1	0	1	W-T	12000
19Ǔ	1	1	1	0	1	W-T/M	13000
19ɓ	1	1	2	0	1	W-T/M	15000
20Ǔ	1	1	1	0	1	W-T/M	17000
20ɓ	2	2	1	0	2	W-T/M	48000
21Ǔ	2	2	1	0	2	ȥ	52000
21ɓ	1	1	1	0	1	ȥ	12000
22Ǔ	2	1	1	2	1	W-T/M	20000
22ɓ	2	2	1	0	1	W-T/M	20000
23Ǔ	3	2	1	1	1	ȥ	23000
23ɓ	1	1	1	1	1	M	22000
24Ǔ	3	3	2	0	3	W-T/M	64000
24ɓ	2	1	1	0	1	ȥ	20000
25Ǔ	2	1	1	1	2	W-T/M	29000
25ɓ	1	1	1	1	1	W-T/M	27000
26Ǔ	2	2	1	0	2	W-T	48000
26ɓ	1	1	1	0	0	W-T	350
27Ǔ	2	1	2	0	1	W-T	17000
27ɓ	1	0	1	0	0	W-T	180
28Ǔ	2	2	1	1	1	W-T	20000
28ɓ	0	0	1	0	0	W-T	230
29Ǔ	2	1	1	0	1	W-T	18000
29ɓ	1	1	1	0	0	W-T	36
30Ǔ	2	2	1	0	2	W-T	43000
30ɓ	1	0	1	0	0	W-T	60

31Ŭ	2	1	1	0	3	W-T	63000
31ƀ	1	1	1	2	0	W-T	175
32Ŭ	2	2	2	1	2	W-T	39000
32ƀ	1	1	2	2	0	W-T	45
33Ŭ	1	1	1	0	1	W-T / M	21000
33ƀ	1	1	1	0	0	W-T	1200
34Ŭ	2	1	1	3	2	W-T	46000
34ƀ	1	1	1	2	0	W-T	570
35Ŭ	2	2	1	0	1	W-T	16000
35ƀ	1	0	1	0	0	W-T	250
36Ŭ	2	2	1	2	3	W-T	58000
36ƀ	1	1	1	3	0	W-T	136
37Ŭ	1	1	1	0	1	W-T	17000
37ƀ	0	0	1	0	0	W-T	35
38Ŭ	2	2	1	0	3	W-T	67000
38ƀ	1	1	1	0	0	W-T	450
39Ŭ	2	2	1	1	2	W-T	47000
39ƀ	1	0	2	1	0	W-T	310
40Ŭ	1	2	1	1	2	W-T	38000
40ƀ	1	0	2	0	0	W-T	45
41Ŭ	2	2	1	0	1	W-T	13000
41ƀ	1	0	1	0	0	W-T	200
42Ŭ	2	1	1	1	1	W-T	19000
42ƀ	1	1	1	3	0	W-T	100
43Ŭ	3	1	2	0	1	W-T	16000
43ƀ	1	0	1	0	0	W-T	30
44Ŭ	1	1	1	1	1	W-T	18000
44ƀ	1	1	2	2	0	W-T	140
45Ŭ	1	1	2	0	1	W-T	18000
45ƀ	2	2	2	0	0	W-T	90
46Ŭ	2	2	2	0	2	W-T	44000
46ƀ	1	1	1	0	0	W-T	130
47Ŭ	2	2	2	0	2	W-T	35000
47ƀ	1	1	1	0	0	W-T	190
48Ŭ	1	1	1	1	1	W-T	21000
48ƀ	1	1	1	0	0	W-T	200
49Ŭ	2	2	3	3	2	W-T	44000
49ƀ	1	1	1	1	0	W-T	280
50Ŭ	1	1	1	0	1	W-T / M	19000
50ƀ	1	1	1	0	0	W-T	1200
51Ŭ	2	2	2	0	3	W-T	62000
51ƀ	1	1	1	0	0	W-T	1450
52Ŭ	2	3	2	2	3	W-T	59000
52ƀ	1	1	2	2	0	W-T	190
53Ŭ	1	1	1	1	1	W-T	17000
53ƀ	0	0	1	0	0	W-T	290
54Ŭ	1	1	1	1	2	W-T	36000
54ƀ	0	0	1	0	0	W-T	800
55Ŭ	2	1	2	2	1	W-T	16000
55ƀ	0	0	1	0	0	W-T	310
56Ŭ	1	1	1	3	2	W-T	40000
56ƀ	1	1	2	2	0	W-T	360
57Ŭ	2	2	2	0	2	W-T	42000
57ƀ	0	0	1	0	0	W-T	160
58Ŭ	1	1	2	1	1	W-T	11000
58ƀ	1	1	1	1	0	W-T	70
59Ŭ	1	1	1	0	1	W-T	18000
59ƀ	1	1	1	0	0	W-T	340
60Ŭ	2	2	2	1	2	W-T	42000
60ƀ	0	0	1	0	0	W-T	380
61Ŭ	2	2	2	3	2	W-T	39000
61ƀ	1	1	1	2	0	W-T	230
62Ŭ	2	1	2	0	1	W-T	17000
62ƀ	2	2	1	0	0	W-T	240

63Ŭ	2	2	1	1	1	W-T	19000
63ƀ	1	1	1	1	0	W-T	560
64Ŭ	1	1	1	1	2	W-T	34000
64ƀ	1	1	0	0	0	W-T	450
65Ŭ	1	1	1	0	1	W-T	18000
65ƀ	1	1	1	0	0	W-T	440
66Ŭ	1	1	1	1	1	W-T	21000
66ƀ	1	0	1	1	0	W-T	1200
67Ŭ	1	1	1	0	1	W-T	20000
67ƀ	0	0	0	0	0	W-T	120
68Ŭ	1	1	1	2	1	W-T	23000
68ƀ	1	1	1	1	0	W-T	290
69Ŭ	1	1	2	0	1	W-T	25000
69ƀ	1	1	2	0	0	W-T	1000
70Ŭ	2	2	2	1	2	W-T	37000
70ƀ	1	1	1	0	0	W-T	800
71Ŭ	1	1	1	0	1	W-T	22000
71ƀ	0	0	0	0	0	W-T	350
72Ŭ	1	1	1	2	1	W-T	19000
72ƀ	0	0	1	1	0	W-T	130
73Ŭ	2	1	1	0	1	W-T	22000
73ƀ	1	1	1	0	0	W-T	560
74Ŭ	3	3	2	2	2	W-T	41000
74ƀ	1	1	1	0	0	W-T	380
75Ŭ	1	1	1	0	1	W-T	12000
75ƀ	1	0	0	1	0	W-T	80

Ŧɑœŭəŭɠ 31. Ƭŭŭŷŷŭəɖ əŭŭŷ Sydney, ɔůɜůŭźəɒɐ ŭɜŶəgůɖ ŭůəɒɛŶŭɤɜ əŭə ´ɟɕůŭæɟɷůɛɦɠ ƃŭəŭŭɲɷűəŭəɕi űɕɟŭœg ɦəɤɜ ŭɤɜ ŭůɑůɜı ɜ ɕɛŶũɤɜ ɟ əŭəɑb

ŭ: ´ɟɕ ŭŭɠɑůɟŭ ůœŭg

ƃ: ɛůŭŷŭŭɖůɟŭ ůœŭ

j ɟɟ ɤ ɛ ŭŭźəɦɠəı ŭəəŭŭg:

ɀ ŭi ɟɕ = ɀ ůŭŭəəŭɔɛɣɜŭůŭůźɒɣɕɖ

ɀ ´ əɣ = ɀ əəŭɦɠɔɕɜɦůŭg´ɕɠ(ɛůŭŭəəŭɔɛɣɜŭəŭəŭɛůŭŷəəŭɕŭŭůŭůźɒɣɕɖ)

Ƭɦəəəɜɕ = ɟ ɛůŭŷəəŭɕŭŭůŭůźɒɣɕɖ (wild type) ůŭůźɒɣɕɖ

3. Ëgœe Ûđůd

Ëűđ³ Ù³Ûű¡ɛɛə»e Ûg Ûë ɛÙ»y Ûđ¸ y>»sÙ ůg³ÙÛë ůÙ Ûœɛyƒ ´Ù¡ÙÛí«dƒ ɛÙ Ûđ¸ G¡eůd¸ ôũý»ɛu³dƒÙÛđ¸ɛy³dƒgô (biprobe) Real Time PCR d¸ Ù³«G³Ùgůd¸ ůÙ ´Ù¡s»ÛÛÛ»Y ɛÙ ***Á»ə»ɛbÙ»Ûđ¸¡sũsÙ»e*** ɔÙůÛ¡dŨũÙ ɛÙÛÛ»ə»Y³»Ù›³ ´ɛg ůɢÙÛœɛ³ÛÛ» ɛÙ Ûđ³ Ù³dÙ»Ù»ĥ¡Ûđ¸ÛÛ Û›³ Ùůd Ù³¡³ ůÛđ³ dÙ¡Ù Ùđ Ù ɛÙ Ť»Ù¡s¤¡ɛɛgəœd [544;545]. Á´ ůd¤ƒ, ɔ»Ù´¡ı Ûđ¸ ű«¡Y y>»sÙ´¡«ů´Ydů»Ù ůgůG›Ûůd¤ƒ Û›³ s»Ûë´Ûd«ə«ɔ»ı³ ´Ù¡Ûɛ›Û¡›³ ĥ´›ƒ Ùg Ûy¤ƒ ÛÛ»s«ɛɛ¤d¤ə Ù³ ɛÙ Ûë ůı¡ůÛđ¸ɛÙ Sydney, ɛÙ Ûđ³ Ù³dÙ»Ù»ĥ¡Ûđ¸ÛÛ ůÛë ũ»œ Ù³Ûĥ»œÛ»ĥ. ¢ÙÙ ÙɢÛů»y ůɛÛÛÙ Ûđ¤ƒ ɛÙ»y Ûđ¤ƒ ə ÙÛÛű Ù»ə³ı«ɢg³ ůÛÙÛ»ů Ù»Y ůd¸ɛÙ³Ù»ə»e ůgůG›Ûůd¸ Ûđ¤ƒ ´Ù¡ɢgůdÙƒ ɐ ɛd¸ ɛÛÛÙ»ə»Y³»Û›³ ůÛđ³ ´Ù¡s«Gɐ V Ûđ¤ƒ ə Ù£´i»d¤ƒ Ûđ¤ƒ ´ÙÙ»ű¡g»ɛÛ¡Ù³ůű¡Yůd¤ƒ (d¸ ɢ´ɛdÙ Ù»ű¡Y¢ÛÛÙ» ə»s»ə»Y ›ƒ Ù³dÙ»Ù»ĥ¡Ûđ¸ÛÛ Û›³ ɓÙ»Ûđ¸¡sũ«›³ ůÛđ³ T»Ù¡s¤¡ɛɛgəœd), ɛÙÛđ¸ ű»Ù»ɛɢ³ɐ, ɛÙÛđ³ Ù³Ù¡ɔĥ¡Ûđ¸ÛÛ Ûđ¤ƒ ³ĥůɢg (ĥ´›ƒ Ùg Ûë´¡ɛůũ»e¡œÛÛÙ» Ù ĥ Ûđ³ Ù»Ûœd ůd¸ Ûđ¤ƒ ůgɛɛÛÛɢ¤ƒ Û›³ ɢgũÛÛÙ¡ĥű»ə›³ ə Ù̊g»ɢə¤gÛÛŶ¡›³), Ûđ³ Ù³ÛÛ¡s»e ɛÙÛÛ ə»Ùůd¸Ù, Ûɢ³ Ù ɢs»ů£ĥ Ù ĥ ***Á´*** (ĥ´›ƒ Ùg Ûë Ù³Ù»³›¡ůd¸d»Ù ůÛ¤ƒ s»Ûë»ɔ»y ƒ Ûɢ£y ƒ ɛÙÛŶ Ù ĥ G¡ı ůd¸ Giemsa), ə Ùd¸ ƒ ə Ù»ɛÙÛđ³ ´Ù¡sɢe ə»y¸d¤ƒ Û›³ ɓ»ɛy›ı ³, Ûđ³ d¸»»dÙ, Ù»ə»Y ĥG» ɛÙÛɢ ű¸i»ɐ Û›³ Ùůd Ù³ı ³. ɀ ÙÛÙ ´Ù¡Ù Y³›¸ s»Ûë»ɔ»»Y ůÙů«ɛy³Ù y>»sÙ Ůd¸ůd¤ƒ ´¡ɛů´Ydů»Ù ůgůGÙ¤»¡ɛɛi ə Ù»Ûɢg Ù ĥ»gÛɢg Ù¡s¤£ɛi Û›³ ***Á´*** (ůd»Ù ũe Ûɢg ɛ»¡ɛɓ»Ù»ɛi ű«¡Ûœg) ĥ´›ƒ Ùg Ûĥƒ Ù³«G³Ù¸d¤ÙÙ ɛÙ Ûđ³ ´ɛůɛÛ»e Real Time-PCR (Q-RT-PCR). Ù Ù¡ÛÛđ¡ɐd¤ÙůĥÛ»ɛ Ù ĥ»gÛɢg Ù¡s¤£ĥg Û›³ ɛ»¡ɛɓɐ›³ ůGÛœÛÛÙ» ůd¸ɛÙ³Ù»Y ɛÙÛđ³ ű»Ù»ɛɢ³ɐ, Ûđ³ Ù³Ù¡ɔĥ¡Ûđ¸ÛÛ Ûđ¤ƒ ³ĥůɢg, Ûđ³ ÙÛ¡ɢű¸dÙ, Ûđ³ ´g»³ĥ¡Ûđ¸ÛÛ Û›³ ***Á´*** ůÛ¤ƒ s»Ûë»ɔ»»yg Ûɢ£yƒ, Ûđ³ Ù³ÛÛ¡s»e ɛÙÛÛ ə»Ùůd¸Ù ə Ù», Ùůd¸Ù³ı ƒ, ɛÙÛđ³ ´Ù¡sɢe ə»y¸d¤ƒ Û›³ ɓ»ɛy›ı ³. ¡ ³»sůd¸ɛÙ»ů›Ûɢ s»Ûë»ɔ»»Y ůÙů«ɛy³Ù ¡Ù»s»ĥ¸d¤ů ə ÙÛÛY Sydney ɔ»Ù´Ù¡ɢgůdÙ***Á´*** ´Ù¡s»ÛÛÛ»Y (Ù ɓÙ»Ù»Ù»›ɛy³Ù ɛÙÛÛY Ù ĥ G¡ı ůd¸ Giemsa), Ù»ÛÛÙ»Ù¤Y Ù¡ű¡ɢi³ Ù³dÙ»Ù»ĥ¡Ûđ¸ÛÛ Ù»ÛÛÙ ə Ù» ɛÙÛÛY Ù ĥ Ù»¡«ɛ›ůd¸, Ù³«G³Ù¸i³«Ù» ɛÙ Ûđ³ ɓɐ¸dÙ»Ù Ûđ¤ƒ Q-RT-PCR ə»ə»ɛÙ»ű¸Ù»ƒ ´¤dÙ³ı ƒ (ůd»Ù ũe ɛd¸ ɛ»ə»gůɛÙÛ»y»ƒ) ɛ»¡ů£y»ƒ Ûɢg ɛ»¡ɛɓ»ɢg ůÙÙ¡s¤£ɛi ƒ´ɛg ůd¤Y³ɢg³ y›ƒ ə Ù» Ûɢg»ƒ 1200 ɛ»¡ɛ»¡ɔÙ³s»ɛɛi ƒ ůÙÙ ĥ»gÛɢg»ƒ Ù¡s¤£ɛi ƒ. B» ə»ə»ɛÙ»ű¸Ù»ƒ ɛ»¡ů£y»ƒ Ûɢg ***Á´*** Ù³Ù»³›¡ůd¸d»Ù³ Ûɢ 1993 Ù ĥ Ûɢg»ƒ Chan ə Ù» ůg³. B» ůg»ɔ»¡Ûí Ù¤ƒ Ù y¤Ù»s Ù³ ĥÛ» ɛ» ɛ»¡ů£y»ƒ Ùg Ûy¤ƒ ɛ´ɛ¡ɛi³ Ù ũ»Ù³›¡s»Ûɢi³ Ù ĥ ´Ù¤dɛ»ĥ³Ù ə Ù» ɛd¸ ´Ù¤dɛ»ĥ³Ù ɓ Ù³Ûđ¡ɑũ»Ù, ɛg»d¤Ûů»e Y ů´ĥ¡»Ù ə Ù» ə¡g´Ûɢů´ɛ¡ɑũ»Ù [546]. ò ə»e Ù ûÙ¤ɛɛy³Ù ůÛđ¡ɑɢg³ Ûđ³ Y ɛ›d¸ ĥÛ» ɛ» ə»ə»ɛÙ»ű¸Ù»ƒ ɛ»¡ů£y»ƒ Ûɢg ɛ»¡ɛ»¡ɔ»ɢg ũÙ» Ù ɢÛÛ»ɛi ´¡ɛu¦³ Ù»ű¡ə»ů¤ƒ Ù»ə»Y ɛ›³ÛÛ³ɛi ƒ ɛ»¡ɛ»¡ɔÙ³s»ɛɛi ƒ ɛÙg´Ù¡ə Ûĥ ɛÙÛÛ»ɛə»ů£ĥ, ´ɛg ĥɛ›ƒ ũÙ» ɛ´ɛ¡ɛi³ Ù ə Ù»ə»ƒ¡ɔd¤ɛi³ [546;547]. Ù»d Ù³ı ƒ ĥɛ›ƒ, ³ Ù Ù ɢÛÛ»ɛi³ ə Ù» Ûɢ ÛÛ»ə»ĥ ůÙŶũ»œ Ù ɢũĥɛd¸ůd¤ƒ Ûɢg ɛ»¡ɛɓ»ɢg ɛÙÛŶ Ù ĥ Ûđ³ Ù Ù³Ù»³d¤ɛ›y³d ɢ¡ɐů¸d Ù³Ûđ»œ Ù»ə¡ı³. ɀ dÙ Ŷə»d Ù»ɐɔd¸ůd¸ Ûɢg Ù¡¡ɐɛÙÛĥƒ ɛÙƒ ³Ù ə ÙÛÛ³¡»Ŷű³ɛ³ÛÛ» ůÛÛd¸Ù¡»Y Ûɢ£yƒ ɛ»¡ɛɓ»Ù»ɛi ű«¡Ûœg Ù»ĥɛÙ»ə»Ù Ù¤»s»ı ůÙ›ƒ, Ù»s»Ù³Ù´¡ĥə»Ù»Ûɔ»Ù¤dƒ¡Ù¦i ůɛÙÛÛ ɔ»Ù³Ù»ə»ɛi g»ə»ɛi ***Á´***, Ù ɢÛ¡ə»Ù¦ɛÙ d³Ù»Ŷ³Ûɢg ɐ g´ɛə»Ù¤ɛɛÙÛɢƒ G¡›ɛɢů›ɛ»Ù»ɛi DNA ´ɛg ə ĥɔ›

ůgɛ´əɖɻɤɛŮŰəɐɠ ŮəəɖəɕgɕɖŮɠ ɛŮ Ű꜀ggɠ ɕɜɜɖɖɤŰŰɠ ´ɕg ɕɻɖůɤɛɕ´ɕɕɐůŮɛŮ, ɜŮ ɛ´ɕɻɕi꜀ɜ ɜŮ Ůɜɕɕɜůi꜀ɜŰŰə[548].

ɻ ɜŮűi꜀ɻɕɐƳɛŮŰɺ ɖŮɻŮ ůgŰəɐ ´ɻ꜀ůɣɔɔɕůɖ, ɧəŰɠ꜀ɕəŮŰŰgɖɡɜŰ꜀ɻɕŰɠ꜀ŭɖɔɖŰɠ (guidelines) Ű꜀ɕg Maastricht HHLůgɜɕůŰ꜀i꜀ɜ Ůəɻɕɤɤůɖ Ű꜀ɕg 𝑨´ ůŮůgɛ´Ůɤ ɛŮŰəɕi꜀ɠ ŮůɖŮɜůgŰ[322]. ¢ ´ɻ꜀ŰŰəɧɛŮəɖ ɖŮɻŮ ůgŰəɐ Ůəɤɔɐ ´Ůɻɕə꜀Ɛɓ¥ɜŮə Ű꜀ɺ ɕ꜀ɻɛɔɖůɖ ůgɜŭgŮůɛ꜀i꜀ ůəŮgŮůɛ¥Ű¥ɜ ůŰŰ ɕ´ɕɖŮ ůgɔəŮŰŰə¥ɔɕɜŰŰə ɣɜŮɠ ŮɜŮůŰ꜀ə¥Ůɠ ŮɜŮəɖŮɠ ´ɻɤŰ꜀ɜɔɤɜ (PPIs) əŮɖıɠəŮə üi꜀ɕ ŮɜŮɓəɛŮəƳɛŮ ůɔəŮŰŰə¥ɔɕɜŰŰə Űɤɜɻɛɔəɐəəɖɖɠ, T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖəŮə¿ ŰŰɻ꜀ɕɜɕŭŮɛɧəɖɖɠ[549]. ⊎ŮɻƳŰŰi꜀ŰŰ, ɖ ´ɻ꜀ŰŰəɧɛŮəɖ Ůəɤɔɐ Ű꜀ɛűŮɜɑŮə gɣɖɖəƳ ´ɕůɛůŰƳ ŮɕŮgɑɖŮɠ əŮə ɕɕ əɧɔɕɕ ŮəɜŮə ɖ ŮɜŮŮɻəɐɠ ŭɕŮůŭgůɖ Ű꜀ɠ ŮɜŰɓɕɜŰəɐi꜀ ɛɣůɤ Ű꜀ɠ ű¿Ůɔɛɛiꜟ Ű꜀ɠ ɔŰůŰɻɜəɐi꜀ ɓəŮɜɜɔɔɧɜɕɠ, ɖ ŮŮɜŰɻɔɕ´ɕɑůɖ Ű꜀ɠ ŮɜŰɓɕɜŰəɐi꜀ Ůɧ Ű꜀ ɑŮɛɖəɧ pH Ű꜀ɠ ůŰ꜀ɛƳɑɕɠ, ɖ ɛɖ ůgɛɛɧ¿ű¤ůɖ Ű꜀ɠ ŮůɖŮɜi꜀ɠ əŮə ɖ (ɔŮɜŮŰəɐ) ŮɜŰ꜀ɑɛ Ű꜀ɠ ɛəɻ¿ɓɑɕɠ ůŰŰ ŮɜŰɓɕɜŰəƳ[550]. ƐŰəɠ ´ŮɻɕůůɧŰŰ¿Ůɠ ´Ůɻɤ´Ű ůŮəɠ ɖ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ŮəɜŮə¤i¿ɕɛ ůgůŰŰŰəɧ ůŰ꜀ggɠ´Ů¿ŮƳɜ¤ ɖŮɻŮ ŮgŰəɐi꜀ɠůgɜŭgŮůɛ꜀i꜀ɠ. ȳ ɛ¤ɠ, ɖ ŮɜɖŮəŰəɧŰɖŰŰ´ɕg ŮɜŮ Ű¿ůůŰŰŰɜŮəŭəƳůŰɖɜ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ŮəɜŮəŮə¥ɜŮɠŮ ɧ Ű꜀ggɠə¤ɻɕɛggɠ ´Ů¿Ƴɔ꜀ɜŰŰɠ Ů ɛŮgɑɖɛ¥ɜdɠ ɖŮɻŮ ŮəŮɠ Ű꜀ɠ ɛəɻ¿ɓɑɕɠ. ¢ ŮɜɖŮəŰəɧŰɖŰŰ ŮgŰɐ əŮŰŰɔɻƳŰůŰŰɜůŮɛŮəŮəi ŰŰɻ꜀ɕ ɓŮɖɛɧ ůŰ꜀ggɠŮůɖŮɜi꜀ɠɖɠ 12ŭŮəgəəɧ ɣəəɛɠ(40,9%) ůŮůɑɣůɖ ɛŮ ŮůɖŮɜi꜀ɠɖɠɛŮəŮəŰ꜀ggɻɔəɐ ŭgů´Ů¿ɖŮ[551]. ȳ´¤ɠəŮŰŰŭůəɜi꜀ŰŰɔɓɖəɕɔɻŮŰíəƳ, ɖ ŮɜɖŮəŰəɧŰɖŰŰ ůŰɖɜ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ´ɛəɕɕŮə ɔŮ¤ɔɻŮŰíəƳ. ƐŰɖɜ Ágɻ¤´Ůɒɐ Ō꜀¤ůɖ, ŰŰ ´ɕůɛůŰƳ ŮɜɖŮəŰəɧŰɖŰŰgəɛŮɕɛɜŰŰə Ůɧ 9.9-43.5%. Bəɑɻ ŮgŰɖgʔɧŰ¥gɻ Ágɻ¤´ɖgŮɛűŮɜɕɛgɜ ůŮŰıgɛŮəŮəi ŰŰɻ꜀Ů´ɕůɛůŰƳ ŮɜɖŮəŰəɧŰɖŰŰgůŮıgɛŮəŮəi ŰŰɻ꜀Ů´ɖgŮ[552]. ũəŮ Ű꜀ɜ Ágəəɖ꜀əɧ´əɖɖgůɛɧ Ű꜀ɛ´ɕůɛůŰɧəgɛŮɕŮŰŰəɛŰŰŰəi 12 əŮə48%. ÁəŰɧgÁgɻ¤´Ůɒɐgō꜀¤ůɖgəŮə ůŰ꜀ɜ g´ɧəɛə´ɛ qpgŰəɧ əɧůɛɛ ŰŰ ´ɕůɛůŰƳ ŰŰɕɛgɜ ɜŮ ŮɕŮə ůŮűıgɛəɻ¿ŰɻŮ[553]. ũəŮ ´Ů¿ƳűŮəɛŮ, ůŰɛɜ T꜀ŮɜŮűƳŰɛ´ɕůɛůŰɧ ŮɜɖŮəŰəɧŰɖŰŰgŭŮə g´Ů¿ɓŮɕŮəŰɛ 4%, Ůəı ůŰgɖ¢⊎ɻ Ű꜀ 10-15%[326].

¢ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ŮɕŮəɛəŮůɖɛŮɜŰəɐ ɛŮəɻ꜀əɛŭɖůŰɻɖŮɻŮ ůgŰəɐ ű¿Ů¥Ů¿ŮŰɖgŮəɻɕɛ¤ůɖgƳ Ű꜀g ɛəɻ¿ɓɑɕɠ əɧɔɤ ŰɖgƳŰ꜀ɖəɐgƳ Ű꜀ɛɐgƳ MIC ´ɕg Ű꜀ɛűŮɜɕɛgəŮə ɛ´ɕɖŮŭŮəı ŮɖŮɻŮ¥ɕŰŰəŮ Ůɧ Ű꜀ əɛŰŰŰɤɛ¥ɜɕ pH, Ůəı ůgɔəŮəŰ¿ı ɜŰŰŰə ŮůɖgƳ ůŮɛŮəƳəɕ ɓŮɖɛɧ ůŰ꜀ ɔŰůŰ¿ɛəɧ ɓəŮəɜɔɔɧɜɕ ŮəəɖəɕŮɑ¤ɻı ɜŰŰgɛŮŰ꜀ɻɕɛ¤ɧůɤɛŮŰ꜀g 𝑨´[554]. ¢ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ŭɻŮ´ɻ꜀ůəɕəəɕi꜀ɛŮəɖ ůŰɖɜ ŮəəɕiəɖŰɖgƳ´ŮŰűgəɕŰ¿ŮəůűŰɻ¥ůɖgƳŰ꜀g 23S rRNA əŮəŮəŰůŰ¿əəɑŮəŰɖɜ ´ɻɤŰŰəɕůi ɜdŮůɖ[555]. ¢ ŮɜɖŮəŰəɧŰɖŰŰɕűŮəɑŰŰŰə ůŰɖ ´Ů¿ɕgůɖŮ ůɖɛŮəŮəı ɜ əgɻɑɣgƳɛŰŰŰəƳɜŮɤɜ ůŰɖɜ ´Ů¿ɜɕgɛ Ű꜀gƳ Ůəəi əɖgƳŰ꜀gƳ´ŮŰűgəɕŰ¿ŮəůűŰɻ¥ůɖgƳəŮə ůgɔəŮəɻɛ¤ɻŰ꜀g ůŰ꜀ɜɕgŮəɕg V Ű꜀g 23S rRNA. qpi꜀ ůgɜɐɖɤgƳ ŮɜŰɑəɻ¿ŰíŮ Ű꜀g ɔɕɜəŭɑɕg 23S rRNA ŮɜŮɔɜɤɻɕɛɜŰŰə ůŰŰŮ ůŰŰəƳɣgɖ Ű꜀g 𝑨´. ¢ ´əƳɕɜ əɕɜɐ ɛŰŰ¥əəŮɜɖ ůŰɖɜ ´Ů¿ɑŰɤůɖ Ű꜀gƳŮəɖŮəŰəɧŰɖŰŰgůŰɖɜ T꜀əŮɻɕɖɻ꜀ɛɛgəɕɖɖ ŮəɜŮə ɖ ɛŰŰ¥ɖŮůɖ (transition) ɻ ŭŮəɕɖgƳ-ũ꜀gŮəɕɖgƳ (A-G) ůŰɖɜ ɖƳůɖ 2143 (ɻ 2143G), Ůəə¥ əŮə ´ɕəəƳgƳ ¥əəŮgƳ (ůɖɛŮəŮəƳgƳ-point) ɛŰŰŰəə¥ɜŮəgƳůŰgƳɖƳůŮəgƳ A2142G, A2142C, A2144G əŮə T2182C. ⊎ɻɧůűŰŰŰ

ycegz UzUz>xjsldUl aUz 3yUf ldeUzUzyf eUUzo>Yz>Uzf h´xgf ez A2115G, G2141C, C2147G, T2190C, C2195T, A2223G aUz C2694A, ez e´edUf ´sdUz1gf 3U ugz3ugYcez3UUz aUz eU Uzdlz>Uzohfldl UUl3 Tlo>Ujsdjeegaedl (556). ozaaez edceUz3slee1a Uzdlz>Uzohfldl UUgf UmzUz dl ´UjUz>xco eUdgo>Yldgf, ez ujYlUzf Uzei+ex3 ´eg U Uz1jco´esei+3 Uzf eUzjeaeuUf aUdi gf aUz edceUz3slee1a Ui´eg dUzUzodUf Uz1jco+ Uzhjuzg Uzg ulUjeYazeg U h Ul3 eUefjYzdô (active efflux pump mechanism) (557). ÆUl3 eUzyUl eUgfeUl3 eydeuze ClariRes© assay UzUz>xjsldqaUz ehjze ez eUUzo>Yz>Uzf A2142C, A2142G aUz A2143G. ¢ UUz>Ugl UUdU (A2143G), ul+eulx3U eU UU ´jhlulUUU ulUlezy3U, Usulgeb Uzolz ulUz 85% Ux3 ´Ujé Ui ulx3 Uzdlz>Uzohfldl UUgf ulUl3 Tlo>Ujsdjeegaedl. ¢ eUUYaa>Uzd UgUe ycUz>Uz Uz>xjsldUlulUl3 ´aUzez3hUldl UUx3 Aggjx´Uox3 Uzo>Y aUzejsulcy3x3 HU ı3x3 UldUz13 (558). ÆUlug3ugUlech eUUfgüi+e Yaa>Ugf eUUzo>Yz>Uzf Uz ug3ea>ah ´eleulUh Uzoz3Ugldgf Uldgf Uzdlz>Uzohfldl 3U Ujz3Y Uz 92%. Hsdlz1gf eUUz+i Ux3 UUY (7) ´Ujsi UUUzı3 Uldz13 Uldgfeeyulgf eUgfulUe´edUüUz Uz3z3Ui dqlaUz eUUzo>Yz>Uzf eUUl3 eydeuze ´eg gjdlsee´eeaulecUeU, a Y e3UUz´a>yae3UUz Yaa>eeeqeUzeslee1a h´xgfUz3UiyjdqlaU´UjU Y3x, eU´sdUzhUjeeb6b>aeczjUiea Yfz3 «efflux pump mechanism». ÆUUjcUldUfx3 Agudo aUzug3. ycUzüUzdlzhUzd Uzdlz>Uzohfldl üdY3Uz ulU gyqla>yf UzeyfeUUz+i Ux3 ´Uzüsz3 Uldz13. j gUh eúlz>UUz ulUl eUzYaqcjeuq Uz1Uzbeczjüea Yfz3 ulUl3 ´Uzüsae qa>aqU, agjoxgfulzfgı jUgfUzeg Aggjx´Upei+ zhUzeg (559). ÆUl üsae eUgf eUz>yUl üUz ´UjsUz>eúdqlUz ulz üUlmeU UldUz1lz>´Uzüs Y. HUjY UUi+UU, ´UjUUlj>edqaU ulUUzüUzo>ae ulqeUz1Uzohfldl eUUz+i ´Ujegqldgf eUUzo>Yz>Ux3 aUz qa>aq3 Ux3 Uldz13 eUjUlzlgjoxgf´Ujsecyfqgqlı jUgqldgf Ux3 c1z1Uzo>ı3 Uz>aeq1 qlUx3: eUUz+i 44 aUz53 Ulí3, eUUz+i 60 aUz62 Ulí3 aUzeUUz+i 68 aUz77 Ulí3. ÆUl üsqlf3ae bob>aeczjUiedüUz1g´Yjcegz ´ea>Yüqlmeyz3Uqgqcyzlsqldgf eUUzo>Yz>Ux3 Ua1z1Uzohfldl UUgf qlUz1Uzbeczjüea Uz>aeq1 aUz qa>aqdgf. ÆUl3 Ujc1qldUx3 Alarcon aUzqg3. ´eg Uüejei+qU´Uzüsz Yqa>aqdgf U h 4 yxgf 18 Ulí3, ´UjUUlj>edqaU qlUUzüUzo>Yqlde1z1Uzo>ae qgqlı jUgqld c3ezüsz1ı3 eUUzbea13 qlUzf qa>aqdgf aYUx Ux3 8 Ulí3. ¢ Uzecdqld ´eg üh dqaUeUz3 hz´sdUzı gfqlUU´Uzüs Yux3 esejhUjx3 qa>aq3 c1zUUz1g´yjGjqdqld Ux3 3yx3 eUzjeaeüı3 (560). ū1zUUz1hz d Uzhjcqlul jeqld eUzjeaeüı3 c3U Ul dUjU Uqlu Ux3 3eqldeYUx3 Ugg UzU3UgqlUzo+ Ux3 esejı3 qa>aq3, üdeszgjcqlqlg3dealfUzdlz>Uzohfldl UUgf qlUz1 qgc3qlzjszye Uz1Uzbeczjüeh. ÆUl3 H´Uzdlc3U´UjYülzoeU, ul+eulx3UeUl3 UjcUldUx3 Bremon aUz qlg3. Ugz ´eqlequh gejecqldqlgf eUzjeaeüı3 qUU ´Uzüs Y aggjxgf c3U ´Udeqlzf Ugg UzU3UgqlUzo+ Ug3edqaUU h 8% Ugz 1987 qlUz 18% Ugz 1997 (561). ü3UUzfqlg3cqlzjszye3Ugfeeyulgf qa>aq3 ´eg Uz1Uz´oldqaUz qgqlx jUgeye3Ugf eUUzo>Yz>Uzf qlUl3 eUzyUl eUgf üUz1 g´Yjcegz üUlmeye3U qgUzUzo>Yeqlc3Uzf qldqlUz1Uzbeczjüea ı3. z UUz+i Ux3 3 qa>aq3Uea ı3 eeYux3, q´jı Ul (44-53) UmzUz1gUe h´eg ´UjUUlj>ei+3UUz>aUz1U´Ujsqlhjlljlz1Uzeqı gfeUUzo>Uzeye3UqlUzo>ycd.

[illegible] Oleastro [illegible] (562). [illegible] Real Time PCR [illegible] 10%. [illegible] (2) [illegible] Cambau [illegible] (2009) test GenoType Helico DR© [illegible] 30%. [illegible] (563). [illegible] Noguchi [illegible] (564). [illegible] (2) [illegible]

[illegible] Lascols [illegible]

Ujsdεɦ bUɔŰdjsűɑɤɜ əUɔ sůűɛəɔɔəÝ ŭůűɛɛysU (bŰji ŰdlŰŰf ɔŰůŰjdźűŰf əUɔ əŰŰŰɜɛɛe bUɔŰdjsűɑɤɜ əŰŰÝ Sydney), gɤjɑf ɤůŰɦůɛ ůŰdɜ UɜÝəgůd Ű́ɤɜ Ű ɛŰŰəůɛÝŰ́ɤɜ 3U ɔɑůŰŰɔ sűəŰdŰjɛgfəɦɔɛgfɔəŰŰdɜ ɔŰůŰjdźűŰ[565]. ÆŰŰd ŭəəe ɛŰfŰjɔŰůdŰ, ´sdŰɔı gŰgŰɦ 3Ű ɛűůɔəůŰŰɔůŰɛ ɦŰɔ ůŰɛɜ ´əddgůɛɦ ´ɛg UɜŰŰÝůŰɛŮ ŭŰɜ ´UjəɔŰɛb Ý3ɛ3ŰŰɔ ´ɛəəɔɑ ŰůdŰɜůdf ɛŮ Uə Ý GəůůdɜdɛŰůɛyɜd UɜŰjɔɦŰdŰŰdfűəɔɔɛɜəgf. ò əəd Uəɔɔdůd ɛ´ɛjůdɜŰůɑŰəɦŰɔŮUəűe ´Ujɦɛɛəɛ sůŰɦɔjŰɛɛŰ ´UjŰŰdjɛddəŮ əŰɔ ůŰɛ crosstabulation ɔUɜŰŰəɩ 3 Ubəɔɑ ůŰɤ3-əŰŰŰɜɛɛəf Ű́ɤ3 ɛəəjɛɛjɔŰɜsůɛɩ 3 ůŰɛɜ sůŰɦɦ´ɤgfŰgŰɛ ŰɜŰɔɜɤjɑůdd əŮɛŮɑjı ůd Giemsa, ´sdŰɜı gɛəɔŰɜŰŰəyf Ubəɔɑ ůŰəf3Ű ɛd3 ŰɜŰjŰí 3ŰŰɔŰ ɦ Ű́əfŰəəjɑůŰəf əgŰŰŰjɛəəɜı 3 əŰɔÝəəŰbəɛGdɛəəÝűŰəɦɛŰɜŰ ´ɛg 3Ű ůgɜɛŭŰůɛegɜ Ůd3 ´Ujɛgůd Ű́ɤ3 ´ɛəgɛɛjűɛ´ijdɜɤ3 əŰůəəəgŰŰŰjɤ3 *in situ*, Ubəə Ý3Ű ŰəŰɔűŰəɦɛŰɜɛ ŰɜŰjŰí ɛŰɜɛ əgjɑɤf Ű ɦ Ůd3 ´gəɜɦŰdŰŰŰjɦ´ɛ ůgůůı jŰgůdf Ű́ɤ3 ɛəjɛɛbɑɤ3 ůŰd bəyɜ3Ű əŰɔ ůŰŰ Ű́ɤyɜəŰ. ÆŰd3 əŰŰô Ůɜɛɛɛɜ ´Ujű ŰɛŰŰəe Ujɔ́ŰůdŰ Ű́ɤ3 Lu əŰɔ ůgɜ. ´Ujəjű Ýű ŰŰɔɤůŰɦůɛ yɜŰɛɛ3Ű́yəɛ ůi3ŭŰůdf ɔŰɜŰŰəɩ 3 Ubəɔɑ ůŰɤ3, yəəjɑůdf əgŰŰŰjɛəəɜı 3, bŰji ŰdlŰŰfűəŰɔɛɛɜəf, Ůɜ Ű́ɦ´ɑůdf Ůdf ɔŰůŰjdźűŰfəŰɔəŰjəɜɛɔyɜŰůdf[566].

ÆŰŰ sůŰɛɔjÝɛɛŰŰÝ ɛŰfŰ (Ůəɦ3Ű 40 əŰɔ Ůəɦ3Ű 41) ´UjŰŰdjůŰŰɔ Ů ůdf ɛdŰ ´ɛəi ŰɜŭəŰŰíyjɛgůŰ ɛɛɛɦjŰdlŰŰ ɛŰŰŰɜi ű́əŰɔɛɛɜəf-ɛŰŰŰəəÝ3ŰɤɜəŰɔ Ůɜ UjɔɦjŰdlŰŰfű-ɛŰŰŰəəÝ3ŰɤɜŰɤɜ: ɛɵ əŰŰŰɜɛɛyf ŰəɜŰɔ ɑŭəůf. ū ŰəɜŰŰŰɔ ɦjŰɔ ɑůɤf ɛɵ ŭi ɛ Ufgŭ́yf əŰŰdɔɛjdůf ůdl ůŰŰũəɜ´ɛɑdůd əŰŰÝ Sydney dŰ ý´jŮŮ 3Ű ůgɛ´Ű́gɑdɛi 3 ůŮ ɛdŰ əŰdɦjŰɔ d ´Ujɛgůd Ű əŰɔ ɛ Ujsdɛɦjf Ůɜ Ujɔı 3 ű́əŰɔɛɛɜɤŭı 3 ůŰɛɜɛŰůɤ3 ůgɜəɛdɤf ůgɛ´ɑ ŰŰɔ əŰɔ ɛŮdl3 bŰji ŰdlŰŰ Ůdf ű́əŰɔɛɛɜəf. Hůə ŰdŰjd ɛ3ůdŰ ´jɹý´Ůɔ ɑůɤf 3Ű ɔɑŰɔ ůŰl3 ůŰŰŰəůŰəÝ ůdɛŰɜŰəe ůɑyůd ´ɛg ´UjŰŰdjɛůŰɛŮ ɛŰŰŰɜi ɔŰɜŰŰəɩ 3 Ubəɔɑ ůŰɤ3 əŰɔ ŮɜŰjɜəɛf ɛŰŰŰ əŰůdŰf. z yGjɛ ůɛɛŰjŰ (12/2011) g´Yjɛɛgɜ 17 ŰɜŰíɛjyf ůŰɛ ŰɜŰəůŰɛŰɜɛ. j gŰyf Ůɔəůɜjı 3ɛ3ŰŰɔ əgjɑɤf ůŮ ŭi ɛ ŰɜŰəůŰɛŰɜ: 1) əŰjəɜɛɔyɜŰůdəŰɔ2) ůgůɑŰűəɛɦjf ***Ásəəɛ bŰɔŰdjsűŰɔəf*** əɔɑɤ3df, ŰɜdŰɜŰəɦjŰdlŰŰfəŰɔ ɛŮɔÝəɤ3 dəəəɩ 3. ÆŰɛ 2ɛ ŰɜŰəůŰɛŰɜɛ ŭŰɜ bjyddəŮɛŰŰŰɜi Ű́ɤ3 ɛɛÝűɤ3 ´ɛg ɛŮəŰůɛůŰɛŮ ůgůɑyŰűůd ŰɜŰŰjɜəɛf ɛŰŰŰ əŰůdŰf əŰɔ dəəəɩ 3 (p=0.169). ūůɛɜ ŰűɛjÝ Ű́ɛ 1° ŰɜŰəůŰɛŰɜɛ, ɛɦjɜɛ ɣ3Ű ´UjsůŰŰəɦ (ɔgɜŰəŰ, dəəədŰf 60 Űűɩ 3, ´UjsůŰŰəɦ 12 ɛɛÝűŰf j) ŮɛűŷɜsůŮ Ca ůŰɛɛÝɑɛg, ɑɤjɑf ɤůŰɦůɛ 3Ű əŰŰŰbjŰűŮəůŰl ůŰŰŭɜ´ɛɑdůd əŰŰÝ Sydney ´Ujɛgůd ŰɜŰjŰí Ůdf ű́əŰɔɛɛɜəf ɛŰŰŰ əŰůdŰf. H-ŰjÝ ŰŰiŰŰ, UjəůŰɛɑ ůgɔɔjŰűůdf ůgɜŭɣɛgɜ Ůl3 ŰɜŰjŰí Ůdf ɛŮŰŰ əŰůdŰ ɛŮ ɔŰɜŰŰəÝ ´jɛůŭɜjsůɛɣɜd Ubəɔdəɛgɑd Ű ű́Űɜɛɛɣɜɤ3 ´ɛg ɛŭdɔɛi 3 ůŰl əŰjəɜɛɔyɜŰůdɑɤjɑf ɤůŰɦůɛ 3Ű ŰŰůɛdjɑ 3ŰŰɔ ůŰűı gůgɛɛŰŰɛɑɛ Ůl3 ŰɜdŰɜŰəɦjŰdlŰŰf ůŰdf ɛŰəjɛəɔŭŰdf ůŰɛggf ´jɛŰŰɜɦjɛŰɜɛggf ɛdɑŰɜsůɛɛi gf[567-570]. z dŰ´sdŰɜe Ůɜɛɔdůd ŰɜŰɔɦjŰdɛdůəjɑɤůd (ÝjŰəŰdŭəjəf´Ujɛgůd Ű́ɛg ɛɜəjɛbɑɛg ůŰɛɜ ɔŰůŰjɜəɦ bəŰɜɜɛɔɦjɜɛ) Ű ɛŰŰəůı g´ɦůŰjɤɛŰ ůgɜÝdjɛɜůdf ɔŰɜŰŰəɩ 3 ű́Űɜɛɛɣɜɤ3 ´ɛg ɛŭdɔɛi 3 ůŰl3 əŰjəɜɛɜəe ŰɜŰjɛ´e.

ÆŰl3 ´Ujɑ́Ű́ůd Ű́ldf ŰŰjɛű́dŰf ŭŰɜ ´UjŰŰdjɛddəŮ ůŰŰŰəůŰəÝ ůdɛŰɜŰəe ůgůɑyŰűůd ɔŰɜŰŰəɩ 3 Ubəɔɑ ůŰɤ3 əŰɔ ŭɜŰbÝdɛəůe Ű́ldf (p=0,838). Á3Ű́´ɤůd, ɑůɤf, ´jɛəŰɔůŰɛ Ůjdɛŭɦ Ű́ɦ

[illegible] [571-575], [illegible] (d=1) [illegible] Scholte [illegible] cac [illegible] vag [illegible] [576]. [illegible] vacA s1, [illegible] cagA+ [illegible] vacA s2/cagA [illegible]

[illegible] Sydney [illegible] [577],[578], [illegible] active efflux pump mechanism). [illegible] Chu [illegible] (double-layer vacuoles) [illegible] [579]. [illegible]

Ó3ŬÛíɟqdɛŬ´ɡg´ɟɡəŬɔ•ÛnÛ3Ûí´ɤûqdÛœŬɔəŬɔsûɡgɟɐ ûgûɡɣÚšûqdÚɤɜ3ɔÛ3ÛÚšɒɪ3 Ŭɔəɔɡɪ ûÛɤ3 ɛÛÚíq3´Ûɟsœɡɐ əɐɣqdgÚɤ3 ɓsœɣɡ1 3. ¢ɡ 90% ŬgÚí3 Ŭɔsœ3Ûíɡ3ÚŬɔûÛgəɔəɦ´ɡg ɣɢÛɔəqdűdÛnŬɦ Ûœ Ɣ3Ûɟɡ əŬɔ Ûœ ûɪ ɛŬ Ûœg ûÛœɛɎɢɡg. ¢ɡ Ûɪɟqdɛ Ŭ Ûɔɦ0ÛɔÛɔ1 3ÚŬŬɔ Ûɦûɡ ûÛœɡf ûg3ügÛûɛɣ3Ûgf (combined) ŬɔÛœɐûÛœgf (Ɣ3Ûɟɡ+ûɪ ɛŬ, Ɣ3Ûɟɡ+ɛÚŬŬbÚŬɔəɐ ɛɪ 3d) ɦûɡ əŬɔ ûÛœgf Ûɑɛɣɟɡggf (´ɢ ɛɦ3ɡ Ɣ3Ûɟɡ, ɛɦ3ɡ ûɪ ɛŬəə´ ɦ´ɡg ŬgÚɣɣgf g´Ɣɟɢɡg3). ¢ ɛÚŬŬbÚŬɔəɐ ɛɪ 3d, dəÛɟűdÛ, dɔɤ3dÛəŬɔ ɡ dɦɔəɡfÚœg ûÛœɛɎɢɡg űŬɔ űŬɔsÚŬŬɔ3ŬÛɔsŬɔ´Ûɟsœɢɣgf ɛÛɑûɢɡgɟɐ ´ÛɟɡegûdŬɛÚŬŬəəƳ3Úɤ3, Ŭɔ əŬɔ ɡɔ ɓsœɣdÚgf´ɡg Ûɔəűdqdû Ŭɔ Ŭɦ ŬgÚɣgf Ûœgf´Ûɟsœɢɣgf ÛɔsÛɔ, Ŭɔ ŬɔəɔɔəƳ, ´ɡəɨ ´Ûɟsœɟ ɑûɛɣ3Ûgf. ÆÛ ŬɔÚœdÛÚŬ ŬɔəɔƳ Ûɑûdgf Ûɔüs Úűɣɟɡɜ3ÚŬ ûgɛ´Ûɟ Ɣûɛ ÚŬŬ əŬŬŬəəɔÛsdɦ Ûɟɔ Ûûd Ŭ Úɤ3 van Zanten əŬɔ ûg3. (580) ûÚɁ3 ɡ´ɡdŬûÛ´Ûɣ ÚɛŬŬəɦ ɛɡ3ÚɣəɡɛÛ´ɡ3ÚœəŬɓɟɣdqəÛɦÛŬɔ Ûœ Ɣ3Ûɟɡ ÛɔsÛɔdɔ´Ûɟsœɢɐ ɦ´ɡg ´ŬɟŬÚqɟÛdÚŬɔ əŬÚô Ûɔɡɢɐ dÛəɟɑɛɤûqd Ûœg ɛsəɟɡɛɟɔŬɔsûɛɪ, Ûɔɪ dɛÚŬŬbÚŬɔəɐ ɛɪ 3d ɢŬɟŬɔÚqɟɑdÚŬɔɤɣgôƳûgəɛô (sanctuary) ɔəŬÛœ **A´**. ʒ dŬ´sdŬɔɐ Ûɔɐɔdûqd ŬɦÛœggf ûgɔɔɟŬíÛdgf ŬgÚœi gÛɔsŬɔɦÛŬdqÛɔɐ ɛɪ 3d ´sdŬɔɪ gɜŬŬɛÚÛəÛnôÛûsəɦ ´ÛɟsƀƳəəɛɜ ɔəŬÛœ ɛsəɟɦɓsœ ŬɦsûÚœəɔəɐgf əŬɔ ɓsœɢdɛsɐɐgf Ɣɛɣqdg, ÛdÚÛ ɦÛɔ ûÚq ɛÚŬŬbÚŬɔəɐ ɛɪ 3d ÛɤsÚgɔɢƳ3ÚÚŬɔ ɔɟdɔɛɟɦÚŬɟd Ûdûɛüɛgf Ûœg ɛsəɟɛɓœg ûÚŬÛɤsdqəŬəƳəɨÚÚŬɟŬ, ɛÛŬɛÚɣəÛûɛŬɜŬɛdɜ ÛəÚdqÚÚŬɔ ûÚœ ŬɜÚœbœŬəɦ. ¢ ÚÛəÛgÚÚdŬ ŬgÚœ g´ɦdÛûd ûŬɜ ɣɢÛɔ ÛɤsÛɔdÛŬɔɤdÛn ûÛ *in vivo* ´ÛɦŬÛɛÚŬəƳ ɛɜ3ÚɣəŬ (581). Á´Ûəüəɐ ûÚq ɛÛəɣÚq ɛŬgf ŭŬɜ ´Ûɟsə•ŬɛɓƳ3ɜ3ÚŬɔ Ŭɟəɔ•ÚɣdÛgf ɓsœɣdÛgf ´ɟɛÛɟɕɦɛŬɜÛgf Ŭɛəɒɪ gŬɦ ɦÚɁ3 ɛÚŬŬbÚŬɔəɐ ɛɪ 3d, ŭŬɜ ɛ´ɛɟɛɨ3 3Ŭ Ŭɜ•Ŭɜɑdɜɨ3 ŬûűŬəɐ ûgɛ´Ûɟ Ɣûɛ ŬÚŬɔɔŬ ŬgÚœ ÚÚq3 ´Ûɟsœɢɐ. ÙƳ3ÚɤgƳəəd ÛɟɔŬûdŬ ɛÛ ÚÚœ3səɐ scintigraphy ŬűgɜŬÚÛɒ 3Ŭ ´ɟɛûŭsəɟɑûÛə ɛÛÚɟɐûɛÛgf´ɛûɦÚÚqÚÚgf ŬɜÚœbœŬəɒɪ 3 ûÛœ dɦɔɛ əŬəÚq3 əÛɟŭsŬəɐ ɛɛɢŬÚœgf ûÛœɛɎɢɡg, ɛÛÚq3 ɛÛəŬəɨÚÚɟd MIC 3Ŭ ´ŬɟŬÚqɟÛdÚŬɔ ûÛœ Ɣ3Ûɟɡ əŬɔ ûɪ ɛŬ (582). ¢ɡ ɓɣɓŬɜs ´Ɣ3ÚɤgƳ ÛɔsŬɔdÛŬɔ ɦÛɔ ÛœûÛœɛɎɢɡg Ŭ ɛÚÛəÛdÚŬɔ Ŭɦ ôÚÚŬɟɛɔŬɜÛdgô ɔŬɜÛŬɔəƳ əŬɔ ´ŬdɛűgûsəɔəɔəƳ ´Ûɟsœɢɣgf, ɛÛ süəŬÚŬɟɦÚqÚÚgf ´ɡg ŭŬɜ ɣɢɡg3 ŬəɦɛŬ Ŭɛəɟɡ´ɡ ŬœɟɣÚíqdÛûəŬɔ əŬdɛɟɣœɡg3 Ûɜ ´ɛəəɛgf əŬɔ ÚÚq3 ŬɜÚÚŬ ɦəɟsûdqûÚŬɢɛɟɣdɛɨɛŬɜŬdÛɟŬ ÛgÚəƳûɢɛÚÚŬ.

ÆÚÚq ɛÛəƳÚÚq ɛŬgf´ŬɟŬÚqɟɐdqəÛÛ ɑdqfûÚÚŬŬûÛəƳûdɛŬɜŬəɐ ûgûɡɣÚšûqd Ûœg ŬɟsdɛɛɨÚɤ3 **A´** (ɦ´ɤgfÚgÚɦfgəÚÚŬɔɟƳúÚÚŬəûÚq3 ÚÚŬɜəɦɛdûdqəÚÚƳ Sydney ɛÛÚœ úɤÚœ3səɦ ɛsəɟɛûəɦ´sɐ), ɛÛÚœ3 ŬɦəgÚœ Ŭɟsdɛɦ Úɤ3 ɛsəɟɛɓɑɤ3 ɦ´ɤgf ÚgÚɦfgf ´ɟɛɣəgɣÛ ŬɦÚq3 Q-RT-PCR. ¢ Ûɜ əɦɔɤ ûgûɡɣÚšûqd ÛɔsŬɔ´əɣɛ3 ûÚŬŬšûÛəƳ sûɡgɟɐ ŬɦÚq3 ´ÛɟsəɟŭíɦɛÛɜdûÚq3 Ûɟɔŭûdŭ Úɤ3 Kobayashi əŬɔûg3 (583). ɛɔɛ´ɛœəɦɛɤgfɡɟdûɛɛ´ɛdqûŬɜ ÛəŭíɟƳüəŭíɛɟÛŬəɐ ÚÛɜ3səɐ (TaqMan© RT-PCR). ¢ŬŬ ɛÚÛəƳûɛŬÚŬÚqfÛɟɔŭûdŭgf Úɤ3 Kobayashi əŬɔûg3. ÛɔsŬɔÛ ɑdqfŬ ɦəgÚŬûgɛɓŬÚƳɛÛŬgÚƳ ÚqfÛ üɛəœŭûdŭgf Úqfɡ ɛggɟdŭgf (UBT), ɦÚŬɜ ɦɛɤgf ´Ûɟsə•ŬɛɓƳ3ÚÚŬɜ əŬɔ dÛɛɐ 0 (ŬɛgûqdŬ ɛsəɟɛɛɟɔŬɜsûɛɪ 3). ɟ əəƳəŬɔ ɛɔ Lascols Ŭɔûg3. ɛÛÚŬɜ3səɐ Q-RT-PCR ŬÛgdÛqŭgfûÛɓsœ´ŭəɦ gəəɦ ɓɣɐəŬɔ ÛɑdqfûÚŬŬûÛəƳûdɛŬɜŬəɐ ûgûɡɣÚšûqd (p<0,001) Ûœg ŬɦəgÚœg ŬɟsdɛɛɨÚɤ3 **A´** ɛÛÚœ3 ŬɜÚÚûÛœɛɢɛ ÚqfÛ ÚÚɜ3səɦɛdûdqfəÚÚƳ Sydney (565). ʒ Ɣəsûŭ ɔœÚÚŬɔ ŭsûsəɐ ɛ3ÚqŬəŬɔûÛœ cost/effectiveness ÚqfÛɛÚdɦüɛg əŬdɪ gəŬɔûÛœ ûɨ3ŭœɛɛ ɢɣɦ3ɛ ɛəɛəəɐɣɤûɐgf ÚqfÛ (2-3 ɪɣÛgfɛÛ

ŰłȝŮȝȕɤɔɐŰɛgɔŮȝŮŰȕɐɛi gəɘɐɛi). ÆŮŮȝŰűŰɛɕŮʃɛŮȕɤŰŰʃ, ɛɘ Ribeiro əŮɘ ůgȝ. ŮȝəŮɘ ´ŮʃŮŰɛʃɤdůŮȝ ɛɘɔʃɦŰŰʃɛ ŰˇɦəgŰɛ Ůʃɘɑɛɦ ɓŮɘŰłʃɘɯɑɤȝ ŮȝȲůŰŰɯɘ´ɛɑdůd əŮŰȲ Sydney, ŮȝŰɛiŰɛɘʃ ɓʃɐəŮȝ ůŮŰıɾʃ ůŰŰŰȕůŰȕɘȲ ůdɛŮȝŰŰɘɤʃ ŭɘŮŰıɛʃɤʃ ůŰȕʃ ŭɘȲŰıɛʃůʃ əŮŰłɔɛʃdůʃ (584;585). ūŮɯŮŰŰɘ ůŮŰıɾʃ əŮɘ Űˇɦ Ŭȕʃ ´ʃɛdɔɛiɛŮȝŮʃ ŮʃɔŮůdůʃ ɦŮɘd ɷůŰɛ´ŰŰɛəɛɔɘəɐ ŰŰȝɘȕɦɛdůd əŮŰȲ Sydney ŭɯŮɘ ŮȝʃɘŮůʃ ´əɖʃɛűıɛʃdůʃ ɔɘŮ łŰłȝ əŮŰŰȝɛɛɐ ŮȝəȲ əŮɘ Űłȝ ´gəȝɦŰłŰŰ Űɤȝ ɛɘɔʃɛɛʃɔŮȝɷůɛɪ ȝ ůŰɛȝ ɔŮůŰʃɘɦ ɓəŮȝȝɛɔɦȝɛ əŮɘ, ɦˇɤɡ ´ʃɛəi´ŰŰɘ əŮɘ Űˇɦ Ŭȕʃ əɛɘ´ɤɡ ůŰŰŰȕůŰȕɘȲɡ ůgůɛŮŰŰůŮȕʃ ŰłɡɛŮȝȲŰłɡɛŰʃ, ɛ´ɛʃůɒȝŰůgȝŭgŮůŰŰɯ ɛŮŰłȝ ŮȝŮʃɔɦŰłŰŰ/ɓŮʃi ŰłŰŰ ŰłɡɔŮůŰʃdŰŭŰʃɖɛ´ɛɑŰůŮŰıɾʃəŮɘȲɛŮůdŰ.

Ægɛ´ŮʃŮůɛŰŰȕȲ, ŰɛA´ ŮɯŮɘɤȝŰʃ´ɛəi´əɛəɛɡɔŮȝŰŰȕȲɛʃɔŮȝȕɛɦʃɡ, ɖ ůgɛ´ŮʃȕűɛʃȲŰɛg ɛ´ɛœg ŮȝŮʃŰȲŰŰȝŮȝ´ɛəəɛɡəŮɘŰˇɦ ŰɛȝɜŮȝȕɛ. ¢ɛ ɔŮȝŰŰȕɦ Űɛg gəɘɐɦ gűɑůŰŰŰŰɘŮəəɛɜ ůŮȕʃ´ɛg Űɛg Űˢȕʃy´ɛgȝ ȝŰŰˢɦɘɜ ȝŮɘ ɛyůŰ ůŰɛ Ůɛɖʃɐɦ´ŮʃɦȲəəɛȝ Űɛg ůŰɛɛȲɛɛg. ¢´ŮʃɛgůɖŰ ŭɖəŮűɐ ɛŰŰŰəəȲȝŮɤȝ ůŮůgɔəŮəʃɐɛɤȝŰŰɛɐɛŰŰŰ Űɛg ʃɦɓɛůɤɛɤŮəɛi RNA ŰˢɖʃŮȲɛŮɘŰɦůɛ ŰłȝŮȝŰŰˇɦəʃɐůɐ Űɛg ůŰł ɛɛʃɔɔɛiɛŮȝɖ űŮʃɛŮɘŮgŰɦəɐ Ŭɤɔɐ, ɦůɛ əŮɘ Ŭɛȝ űŮɯɦŮg´ɛ Űɛgɛɐʃɛ´ŮʃɦȲəəɛȝŰɛgůŰɛ ɛ´ɛœ ŮȝŰˇŰiůůŰŰɘɦ´ɤɡ ŮgŰɦgŰˢŰɤɛ ŮŰłȝ ɛŮŰłȝ ŰŰɯɦŮʃɛdůd əŮŰȲ Sydney. ūŮɯŮŰŰɘ, əɛɘ´ɦȝ, ɦŰɘɖ ŮɘəɖəŮɑůʃŮůd ŰɛgɛŮŰłȝ ȝŮȝɘůŰɐ ŭŮȝ ´ŮʃɯʃœŮŰŰɘ ɛɦȝɛ ůŮŰɛ´ɯɤɡ *(in situ)* ŮəəŮɤɡ ŰłɡŰʃɯɛɛɡ Űˇɛɯɘůɛɛi ŮəəȲ ɤɡŮɘ ɔŮȝɯɦŰŰʃɖ ŮɑůʃŮůd ůŰł ű̇gůɯəɛɔdŰŰɛg ůŰɛɛȲɛɛg ŮəəȲəŮɘŰɛg ɛʃɔŮȝɷůɛɛi ɔŮȝɯɦŰŰʃŮ, əȲŰɘ´ɛg əȲȝŮɘŰłȝ ŮȝȲɔəɖ ŰłɡɛʃdɛɡdŰʃŰˇůgŰɘɐɡ´ʃɛůɤɔɔɷůɖɡ/ŮəʃɯɤɤůɖɡŮɘŰˢŰŰɘɐɛ ɔɘŰłȝ Űˇɛűgɔɐ ŮˢűŮɯɛɛɤɜȝ ɦˇɤɡɖ əŮʃəɯɛɔɤɜŮůɖ əŮɘɖ əȽɛűɤɛŰŰɛɔɤɜŮůɖ.

ʐ ŮŰłȝ´ŮʃŰˇȲȝɤ ŮʃɔŮůdŰɛŰɡəŰŰŰŭŮɯŮɛŮˢɤůŰɤ əŮɘůŮ´ŮʃɯʃɷůɛɤȝɖɤəŰŰůd,´ɤɡɛəʃɤɡ ɛŮŰŰɓɛəɤɡůŰɛ ɔŮȝŮŰɘɦ gəɘɐɦ ŰɛgɛA´ ɛŮŰłɖ ɛɛʃűɐ ůɖɛŮȝŮəıȝ ɛŮŰŰɓəəȲȝŮɤȝ ůɑŮŰɑɛɛȝŰŰɘɛŮ ɷůŰɛəɛɔɘəɐɡɛŮŰŰɓɛəɤɡůŰɛg ɔŮůŰʃɯɛɛi ɓəŮȝȝɛɔɦȝɛg, ůgɛɓȲəəɛȝŰŰɡɛgůɷŮůŰɘȲůŰłˇʃɛů´ȲdŮȝŭ Ůˢɓɑɤůdɡ Űɛgɛɐʃɛɓœg,´ŮʃŮŰɛʃdůd´ɛg ŭůűŮɘıɡŰˇŮɘŰŰɑ´ŮʃɷůɦŰŰʃůɡɡɛŮəɘȲŰłɔŮȝŭŮŰˇɤɡ.

4. Ëgε´ÛjŸûεÜŰŰ

1. ËÛ ´ÛjsûŰŰûs Y ***ΛəəɔɛbÜəÜłjsüsÜəɛgʃ*** ɔÜûÛjdźüÜgʃ εÛ ÜɜdůəŭûsɦŰłÜŰ ûÛ dÛjŬ ÛdÜ ůəjɑɛx ûdgʃ ɦ´ɛg ûŰɛ ûɑɛεÜ ûgɛεÛźɣɑÛə əÜə d T əÜjsdjɛεgəɑɛd, ´ÛjÜŰłjůdŰÜə Ûjsdεɦgʃ εÛŰŰəəŸɜÛx ɜ ûŰłɜ Üəi əd ŰłgʃdÛ´ŰûügəɛÛjÜsûúÛjŸûdgʃ Ű£g 23S rRNA Ű£g εsəjɛɓɑɛg əÜəüəÜdŰÛjÜûŰgʃdɣûÛgʃ A2142C, J 2142G əÜə A2143G
2. Bə´ÛjŬŸɜx εŰŰÜəəŸɜÛgʃε´ɛjɛi ɜ εÛÛsźgɑdÜɜÜÜɜɑɜÛgʃdɛi ɜ ůÛÛjɑÛźÜəɦ ɓəs´Ûəɦ gəəɦ (ŭÛɜ ŬÜəŰɛi ɜŰÜə ɑx ɜŰÜɜŸ ɓÜəŰłjɑúəÜ) εÛ ŰÛɑɜsəe Real Time-PCR əÜə Ű£ ´jɦůúŰŰÜŰ£´ɛjsəŸüəÜdɣůɛɛ kit *H.pylori* ClariRes© Assay
3. Bəε ÛŰÜəəŸɜÛgʃ ÜgÛźgʃ ůɑÛŰɑɛɜŰÜə ůdɛÜɜŰəŸ (p<0,005) εÛsůŰ£əɛɔəɣgʃ´ÛjŬɛɣÛjɛggʃŰłʃ ***Λəəɔɛbüəüłjsüsüəɛgʃ*** ɔÜûÛjdźüÜgʃ ɦ´xgʃ ŰÜɜsɛɛi ɜŰÜə əŰŰŸ Sydney əÜə ůÛgʃ ɛ´ɛdůʃ ´ÛjsəŬɛɓŸɜɛɜŰÜəd ű£əÛəɛɜe, d Ü£ÛjɔɦŰłÜŰ Ûłgʃ ɔÜûÛjdźüÜgʃ, d Ü£ŰÛjsəe εÛŰŰ əÛůdŰ, d ´gəɜɦŰłÜŰÛźɜ εsəjɛɓɑx ɜ ûŰɛɜ sůŰɦ, ɦɑəɦɛɣgʃəÜəd ÜÛjɛűdŰ
4. Bə ´ÛjsůůɦŰÛjÛgʃ εÛŰÜəəŸɜÛgʃ (90%) ûɑÛŰɑɛɜŰÜə εÛ ɐ´sÜgʃ-ɛɣŰÛjsÜgʃ ɓÜjiŰłÜŰgʃ ɔÜûÛjdźüÜgʃ
5. J´ɦ ŰŰ ŭdɛɛɔjŰźəɔŸ/əɛɛ´Ÿ ŭÛůɛɛɣɜÜ ´ÛjŬŰłjůdŰÜə ůgůɑɣŰźůd Źɣɜ ɔÜɜÛŰźəɹɜ Üəəɛɑ ůÛɣɜ εÛŰłɜ dəəədŰ, əÜəŰłɜ ´Ûjsɛɑɛ əɐɣdgʃźɣɜ ɓəsɣɑɹɜ, Üəə Yɦɑəɛ ÛŰɛ ű£i əɛ əÜə Ű£ εsəjɛɓɜÜəɦ ű£jÛůɛ

6. Bə ´ÛjsůůɦŰÛjÛgʃ εÛŰÜəəŸɜÛgʃ (90%) Ü£ŭÜɜɑɛɜŰÜə ůÛɓəɣdůʃ´ɛg Üəɐűdd ůÜɜ ŬɦŰ£ Ÿ3ÛjɛəÜəŰ£ ůɹ εŬŰ£g ůŰ£ɛŸɑɛg
7. Z səjɛɓɜÜəɦ ɔÜɜÛŰəɦ gəəɦ (´sdÜɜɹ gəɛəəəÜźüůgʃɛɛjűɣgʃŰ£g ***Λ´)***, Üɜsɑɜ ÛɹÛŰÜəɛÛQ-RT-PCR ůÛɦəŬŰŰ´ÛjsůŰŰŰəŸÜəɦɛŬəÜəɛŰŰŸŬɦ Ű£ɜ ôŰsźgɑɛêűÜəɛɛÜəəŸůəjɑɛx ůd Ű£g εsəjɛɛjɔÜəsůɛɛi, ɦ´xgʃŰgÛź ŮsɓÛbÜɹ ɜÛŰÜəɛÛ2q ɓəsɣdŬ
8. ËɑÛŰəŸ ůgɑɜɐ ÛɑŬɜdÜəŰəɦŰłÜŰÛgʃ ůŰł ɜ T əÜjsdjɛεgəɑɛd ÛəüÜə d ůgɜi´ÛjɜdεÛŰÜəəÜɔɛyɜx ɜ + ÜɛÛŰŸəəÜɔÜźx ɜ ůŰÜəÛɑɹ ɜ ůŰɛɜ ɑŭsɐ εsəjɛɓɜÜəɦ´əɖdgůɛɦ
9. ËÛ εsəjɦ ÜjsdɛɦŰ´ÛjsůŰŰŰəɹ ɜ εÛ ÜɜdÜəŰəɦŰłÜŰ ůŰł ɜ T əÜjsdjɛεgəɑɛd ŭÛɜ ÜɜsɑɜÛɹɛɜŰÜə εÛŰÜəəÜɔɛyɜŰůŰÜəɣɑd (εÛŰł ɑjɐůd Ű£g kit *H.pylori* ClariRes© Assay) - ɔəŰŰgʃ´ÛjŬŸɜx εŰŰÜəəŸɜÛgʃ
10. Ëgɜi´ÛjɜdεÛŰÜəəÜɔɛyɜx əÜə ÜɛÛŰŸəəÜźx ɜ ůŰÜəÛɑɹ ÜɜsɑɜÛɹɛɜŰÜə ůÛ ÜəŸɑsůŰŰgʃ ´Ûjź ŰÍ ůÛgʃəÜəůÛ´ÛjsůŰŰŰəŸůŰŰɛ´ɛdŬÛźgźɑŸɜŰŰÜə´əɐjdgʃÜəjɑɛx ůd
11. ¢ɛ εsəjɛɓɜÜəɦ ű£jÛůɛ ɦ´xgʃ ÜgŰɦ ´jɛůŭsɐjɑɛŰŰÜə εÛ Ű£ɜsəe Q-RT-PCR ůɑÛŰɑɛŰŰÜə ŰɦəgŰŰ εÛŰłɜ sůŰɛəɔəe ÜəÛŰɛdůd Ű£g Ű ɛsəsůɛɛi/´ÛjɛgůdÛgʃ Ű£g ɓÜəÛłjsüɑɛg əÜŰŸ Sydney

12. ū ŬœŮŰŬə ĥŮə d ´ŬĵɐgůdŬ ɐ ɛd ɛŮŰŬəəŸɜŮx ɜ Ů dĵ ŮŸɛŮə Ůĥůɐ Ůłɜ ŬɜŰŰ ĥəĵ ŋůd ůŮłɜ dŮĵ Ŭ ŮgŮəɐ Ŭɔɤɔɐ ĥůɐ əŬə Ůɛɜ ű ŬœĥŮg´ɐ ŮłqƒAəəɐɓŬəŮłqŋůŋŬəɐqƒ ɔŬůŮĵ dűŋŬŋ, ĥ´ɤ ƒ ŬgŮĥgŬ ɐŮg´ ɪ ɜŰŰŬəůŮł ŰŬœəĥɛdůd əŬŰŸSydney

[illegible]

[illegible] Gram (-) [illegible] MALT [illegible] 23S rRNA [illegible].

[illegible] Sydney ([illegible] Houston). [illegible] 150 [illegible] 75 [illegible] 2 [illegible] 25 [illegible] 50 [illegible] Sydney [illegible] Roche LightCycler© [illegible] Real Time PCR [illegible] kit *H.pylori* ClariRes© [illegible] Ingenetix, Vienna, Austria. [illegible] Quantitative-RT-PCR. [illegible] (16/25) [illegible] A2142C, A2142G [illegible] A2143G [illegible] 23S rRNA [illegible] (7) [illegible] (p<0,005) [illegible] Sydney ([illegible]

ɛəɲɹɛɓəʟɔəɐ ´ʊɲɹɛgůɑʊ/ʊ̆ ɛəəəůɪɛɦɡ) ʊəʊɦɡ ʊɑɡ ʊʊɲɹɛűɑʊɡ. Ĥůɛgɲɹɐ ůgůɔɣʊɦůɑ ʊɤɜ ɔʊɜʊʊɦəɪ ɜ ʊɔəəɛɯ ůʊɤɜ ´ʊɲʊʊɑɲ ʊɑʊʊɔ ʊ̊ ɑůɑɡɡ ɛʊʊɑɜ ɑʊʊɑʊ əɔʊʊɑɜ ´ʊɲəɛɑɐ əɐɣɑɡɡ ʊɤɜ ɓəɛɣɯ ɜ, ʊɔəəɎɦɔɵ ɛʊʊɛ űɨɹəɛ ʊɤɜ ʊůɑʊůɜɪ ɜ əʊɔ ʊɛ ɛəɲɹɛɓəʟɔəɦ űɛɲʊɑɐ ɦ´ɤɡ ʊgʊɦ ´ɲɛůʊűɛɲɑůɑɡəʊɛʊʊɑɜ Q-RT-PCR. ¢ɛ ʊʊəůgʊʊɑɐ ůɑʊʊɑɛʊʊɔəůɑɡəʊɛʊʊɑɜ ʊ̆ ɛɑɯůɑɡ ʊɛɡ ɛəɲɹɛɓɑɛg ɦ´ɤɡ əʊʊʊɔɲɎűʊʊɔəůɑʊʊɑɜ ůʊɑɜ ʊʊɔəɯɦɛɡůɑ Sydney. ¥gɛ´ʊɲʊůɪɛʊʊɑəɎűʊɔəůʊʊɔɦʊəʊɛ ***A´*** ůɔəʊɔɤɜʊgʊ´ɛəɨ´əɛəɛɡɔʊɜʊůɑəɎɛɲɔʊəůɨɛɲɡ, ɡ ůgɛ´ʊɲɛűɛɲɎɛg ɛ´ɛɑɛg ʊəʊɲʊɎʊʊɔəʊɜ ´ɛəəɛɑɡəʊɔʊ ɦ ʊɛɜ ɜʊɜɛůɑʊ. ¢ɛ ɔʊɜʊʊɑəɦ ʊɛg gəɛəɦ gűɑůʊʊʊɔəʊɔəəɛɯ ůʊɡ´ɛg ʊɛg ʊɹɛ¥´ɛgɜ ɜʊʊɹɔɯ ɜʊɜɛɤůʊůʊɛ ʊɛɑɲɛəɦ ´ʊɲɛɒŸəəɛɜ ʊɛg ůʊɛɛŸɑɛg. ¢ ´ʊɲɛgůɑʊ, ŭɑəʊŭɐ, ɛʊʊʊəəŸɜʊɤɜ ʊɑɲʊŸɑʊɜ ʊɦůɛ ʊʊɜ ʊɜʊʊ ɦəɲɛůɐ ʊɛg ůʊʊ ɑɛɲɑɔɛɨɛʊɜɑ ű ʊɲɛʊəʊɦůɡ´ɛ ʊɛg ɛəɲɛ´ʊɲɛɒŸəəɛɜʊɛɡůʊɛ ɛ´ɛɑɛ ʊɜʊ ʊ̊ůůʊʊʊəɦ´ɤɡ ʊgʊɦɡəʊʊɔɲŸűʊʊɔɛʊʊɑɜ ʊʊɜəɦɛɑůɑ əʊʊŸ Sydney. ū ʊɜůʊʊɔəɛɛ́ɦɜ, ɦʊɒ ɑ ʊəəɑəůɑɲʊŭɐ ʊɛg ɛʊʊɛɜ ɜʊɜůɐ ŭʊɜ ´ʊɲɛɲɛůʊʊɔ ɛɦɜɛ ůʊʊɛ´ɛəɣɡ *(in situ)* ʊəəʊɔɣɡ ʊʊɑɡ ´ʊɲɛɑɛɑɡ ʊ̆ ɛəəůɛɛɨ, ʊəəŸɣɑʊɔ ɔʊɜəɦʊʊɲɑ ůʊɤɜ ʊgůɛəɛɔɑʊ ʊɛg ɛɲɔŸɜɛg əʊɔ ʊɛg ɛɲɔʊɜůɛɛɨ ɔʊɜəɦʊʊɲʊ̆, əŸʊɒ ´ɛg əŸɜʊɒ ʊɑɜ ʊɔŸɔəɑ ʊɑɡ ɛɲɑɐɡ ɑʊʊɲʊ̆ʊɑ ɡʊʊɲɔɯůɑɡ/ʊəɲɑɛɣ ůɑɡʊ̊ɛʊʊɔəɐ ɔəʊɑɜ ʊ̆ ɛűgɔɐ ʊ̊ɛʊʊɛɛɣɜɣɜ, ɦ´ɤɡɑ əʊɲəɛɔɣɜʊůɑ əʊɔ ɑ̊ɛűɣɛʊʊɛɔɣɜʊůɑ.

ABSTRACT

Molecular detection of *H. pylori* macrolides-resistance strains in archival material and correlation with histological data according to Sydney classification

Sofia Gazi, Biologist, PhD thesis

Introduction. *Helicobacter pylori* (*Hp)* is a spiral, microaerobic, gram negative bacterium that infects gastric mucosa with a prevalence rate more than 50% and is associated with different digestive diseases such as gastritis, peptic ulcer and neoplasia as MALT lymphoma and gastric carcinogenesis. The progression of these diseases is affected by the genotype of the organism, the immune response of the host, as well as by genetic and environmental influences. As a consequence, all consensus guidelines recommend eradication of *Hp* for patients with symptoms. Standard therapy combines a proton pump inhibitor (PPi), or ranitidine bismuthe citrate and two antibiotics chosen among Amoxicillin, Clarithromycin and Metronidazole. Many factors have been implicated as causes of treatment failure, and among them are certain genetic changes in terms of point mutations in the peptidyltransferase region of the domain V of the 23S rRNA of *Hp,* connected particularly with Clarithomycin resistance.

Aim. The focus of this study was to evaluate these genetic changes in formalin-fixed paraffin embedded biopsies of *Hp*+ patients and to correlate them with various phenotypic changes expressed by Sydneyôs classification parameters.

Material and Methods. A total of 150 *Hp*(+) gastritis cases (biopsies-paraffin blocks) were studied, taken from 75 patients divided in 2 groups: group A consisted of 25 Clarithromycin-resistant *Hp*(+) gastritis patients and group B consisted of 50 *Hp*(+) gastritis patients where successful eradication was achieved. Histologic classification was done according to Sydney criteria in bioptic material obtained before and after *Hp*(+) gastritis therapy. In most of the cases adequate quantity of DNA was extracted from archival bioptic material and analyzed in a Roche LightCycler© RT-PCR thermocycler, using the recently introduced *Hp* ClariRes© kit (Ingenetix, Vienna, Austria), for the determination of point mutations in the 23S rRNA gene, responsible for Clarithromycin resistance. At the same time, a Real Time Quantitative PCR was also performed using the same cycler at the same DNA, in order to determine the absolute number of *Hp* bacteria per clinical sample.

Results. Our results revealed that in most of the Clarithomycin resistance cases of group A (16/25), certain point mutations at sites A2142C, A2142G and A2143G of the 23S rRNA had occurred. In some cases among group A patients, it was shown that mixed infections with both susceptible and resistant *Hp* strains had also occurred. Seven (7) cases from group A patients showed no mutations at all. A coexistence of mutated and wild type cases in 3 out of 50 *Hp*+ patients before therapy were observed in group B. A statistically significant association among almost all Sydney classification parameters (except atrophy) and genetic alterations in 23S rRNA of *Hp* were noticed. Furthermore, a strong correlation between genetic alterations and age of the patients was revealed, as well as between genetic alterations and the sites from where the biopsies were obtained (antrum, corpus, cardia, angle, and fundus). No correlation was observed between genetic status and absolute number of bacteria per clinical case as defined by Q-RT-PCR. *Hp* quantity correlates well with bacterial colonization as described histologically in Sydney classification.

Conclusion. In conclusion, it seems that *Hp* is a rather genetically complicated microorganism, the biological and clinical behavior of which is largely affected by the host. Enhanced risk may be related to differences in expression of specific bacterial products, to variations in the host inflammatory response to the bacteria, or to specific interactions between host and microbes. Genes that are heterogeneously represented among *Hp* strains, however, may encode candidate virulence factors that influence the pathological course. *Hp* genome is largely characterized by genetic variability that permits the survival of the bacterium in a quite hostile environment. This genetic diversity affects the response of *Hp* in the followed treatment strategies, and alters the phenotype of the gastric mucosa environment, as this reflected in Sydney classification. So our findings in this study confirm the relevance of the *Hp* genotypes for the severity of gastric disease and the efficacy of antibiotic therapy to further prevent the (possible) progression to carcinogenesis or lymphomatogenesis.

dHdbs HBũΛj ū Hj

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