International Journal of Clinical Science and Medical Research
ISSN(print): 2770-5803, ISSN(online): 2770-582X
Volume 05 Issue 07 July 2025
DOI: https://doi.org/10.55677/IJCSMR/V5I7-01/2025, Impact Factor: 8.005
Page No : 152-162

Association between interleukin-18(AC)"rs 1946519 genotype) gene polymorphism and Helicobacter pylori infection in the southern of Iraq (Nasiriyah Province)"

Qusay Hachim Oudah
Asisst. Lecturer, Ministry of Health\Karbala Teaching Hospital for Children

ABSTRACT

The study's was conducted in the south of Iraq (Nasiriyah Province), to detect relationship between (IL-18) gene polymorphism and H. pylori infections from the period 10/1/2021 to 1/3/2022, where 100 blood samples were collected H. pylori patients for the purpose of DNA extraction and identification of interleukin-18 polymorphisms. The results were as follows: The demographic and mdicale features of a whole of (100) patients were considered in this study, involving aged, sex, mean body weight, smoking, alcohol use, education, income level, and related to stomach cancer. There were 35 women and 65 men in the study group, respectively. The percentage of infection was highest in the population in rural areas, where the mean age was 53.9 10.8 years. Sequencing was performed on 30 randomly selected blood samples, and the results revealed that none of the samples had changed., Also found In this study the mutant heterozygous (AC) " rs 1946519 genotype. were associated with higher levels of IL-18 and severe gastric inflammation compared with other genotypes. The results of sequencing by Macrogen Corporation, were uis alised V.7.2.6 program by Bioedit, as well as and we made alignment using Clustal Omega tool available online. the results showed there was compatibility between recorded wolrd gene bank IL-18 polymorphism with IL-18 polymorphism in H. pylori patients in studied area.

Published Online : July 05, 2025

KEYWORDS:
interleukin-18 (AC) " rs 1946519 gene Helicobacter pylori infection Iraq (Nasiriyah Province)

INTRODUCTION

Interleukin-18 (IL-18) takes powerful immunomodulatory superior effects. The aforementioned is the only cytokine with a single measurements to encourage T helper 1 or T helper 2 opposition, provisional on the immunologic context. Serum levels of IL-18 are enlarged in several human illnesses and it has been implicated in the pathogenesis of several immune-mediated developments. Certain of the recent key loans in the immunobiology of IL-18 are debated in this appraisal.

Interlukein-18 is a pro-inflammatory cytokine that has already been found like an inducer of interferon (IFN) [1]. It is expressed constitutively in a wide range of cells type, includes monocytes/macrophages, dendritic cells, and epithelial cells [2]. It was formerly thought to be a participant of the Interleukin-1 family of cytokines for its pleated structure, which was discovered to be identical to that of Interleukin-1 [3]. As well, IL-18 is converted by way of an undeveloped protein covering an N-terminuspro-dominion that necessity be cut for complete movement. Caspase-1, the inflammasome's cytosolic enzymatic effector, was already identified as a key player in the generation of Interleukin -18, particularly in immune cell [2,4]. In contrast to Interleukin -1, Interleukin -18 remains free in the extracellular environment in its biologically active arrangement of side to side holes formed by oligomerization of Gasdermin D, which is then slashed by caspase-1 [5].

Corresponding Author: Qusay Hachim Oudah

****Cite this Article: Qusay Hachim Oudah (2025). Association between interleukin-18(AC)"rs 1946519 genotype) gene polymorphism and Helicobacter pylori infection in the southern of Iraq (Nasiriyah Province)". International Journal of Clinical Science and Medical Research,5(7),152-162***

MATERIALS AND METHODS

On 10/1/2021, I began collecting samples for patients suffering from H. pylori infection, as work began on collecting samples at Al-Rifai Hospital after All procedures for sample collection have been completed.Its purpose is to know the number of infected people in the city of Al-Rifai/ Dhi Qar governorate, the relationship of IL-18 to the injured

and the extent of its impact and effectiveness. Where 2 moles of blood were taken for each infected patient and 2 moles of blood for the non-infected, where the total number was 100 positive samples and 100 other negative samples, and the sample was collected in an anticoagulant tube, After I finish collecting samples for the day, I put the collected samples in the freezer. The sample collection process took 3 months, then the samples were taken to the Al-Amal lab in the city of Najaf with the aim of conducting a PCR examination for them. The samples were examined and the results were good. Then the genetic sequencing examination of 30 samples was carried out, and the work took about 3-4 months.

Table (2:3)Primers used in this study

Target gene		Sequence (5'-3')	Ta (°C)	Product size	Reference
IL-18	**F**	AAGAGGTACAGGTTTTGGAAGGCA	**60**	**350 bp**	
	R	TCCCGAAGCTGTGTAGACTGCA			

3. RESULTS

3.1 Results:

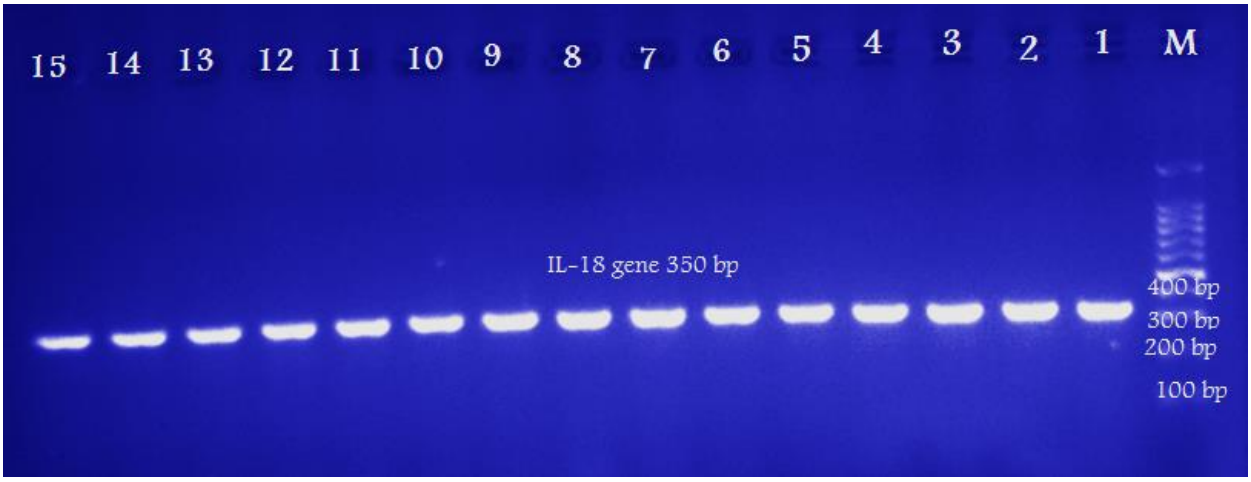


Figure (3-1): RedSafe Nucleic Acid Staining Solution Agarose gel of monplex PCR amplification of DNA extracted from whole blood and amplified with IL-18 gene primers. Electrophoresis was performed at 75 volts for 1 hour. Lane (M), DNA size marker (100 bp ladder), lanes (1- 15 are diffrant sampls) . have IL-18 positive results (350bp).

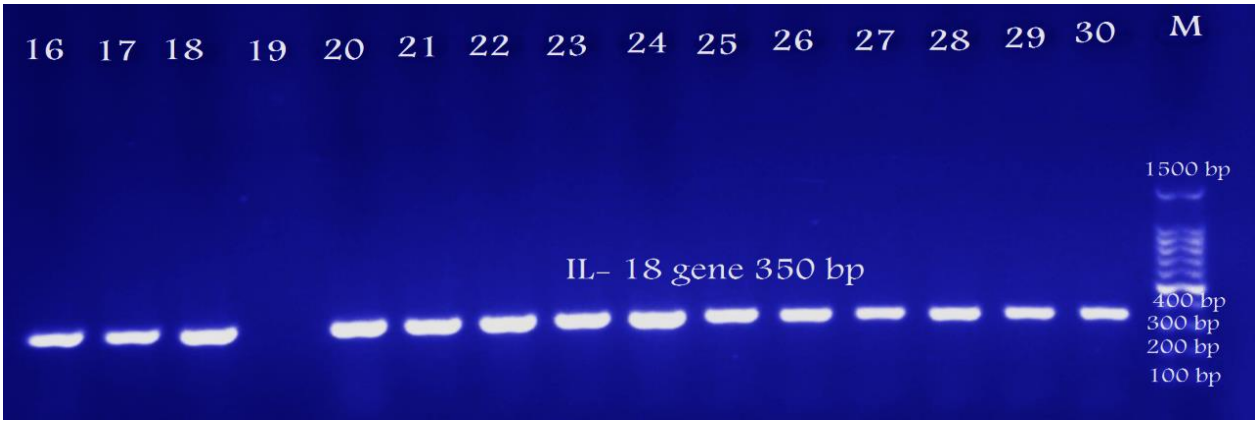


Figure (3-2): RedSafe Nucleic Acid Staining Solution Agarose gel of monplex PCR amplification of DNA extracted from whole blood and amplified with IL-18 gene primers.

The electrophoresis was carried out for 1 hour at 75 volts. Lane (M): DNA molecular size marker (100 bp ladder); Lanes (16- 30 are diffrant sampls) . have IL-18 positive results (350bp).

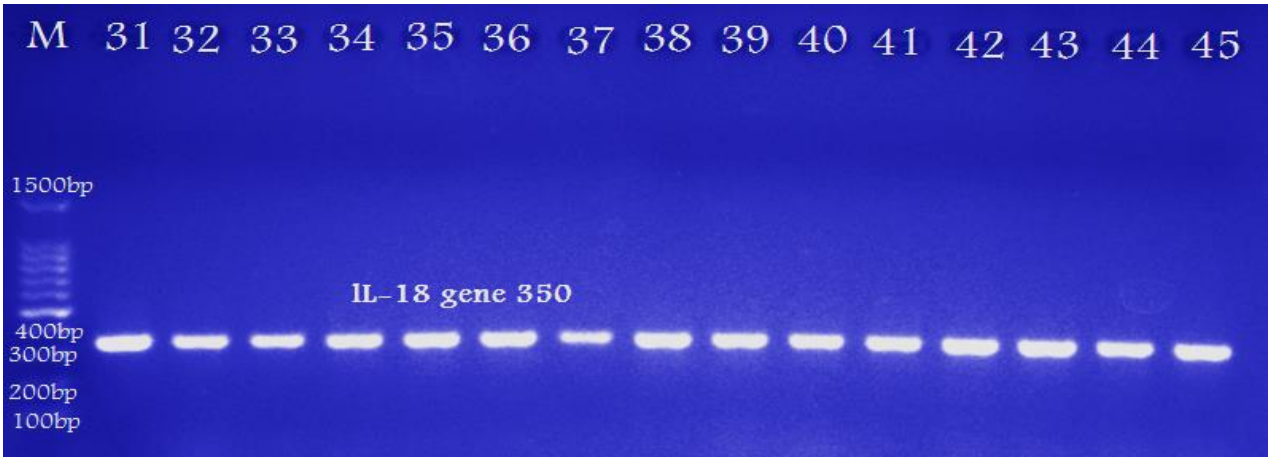


Figure (3-3RedSafe nucleic acid staining solution agarose gel of monplex PCR amplified products from whole blood extracted DNA and amplified with IL-18 genes primers The electrophoresis was carried out for 1 hour at 75 volts. Lane (M) is a DNA molecular size marker (100 bp ladder), and Lanes(31- 45 are diffrant sampls) have IL-18 positive results (350bp).

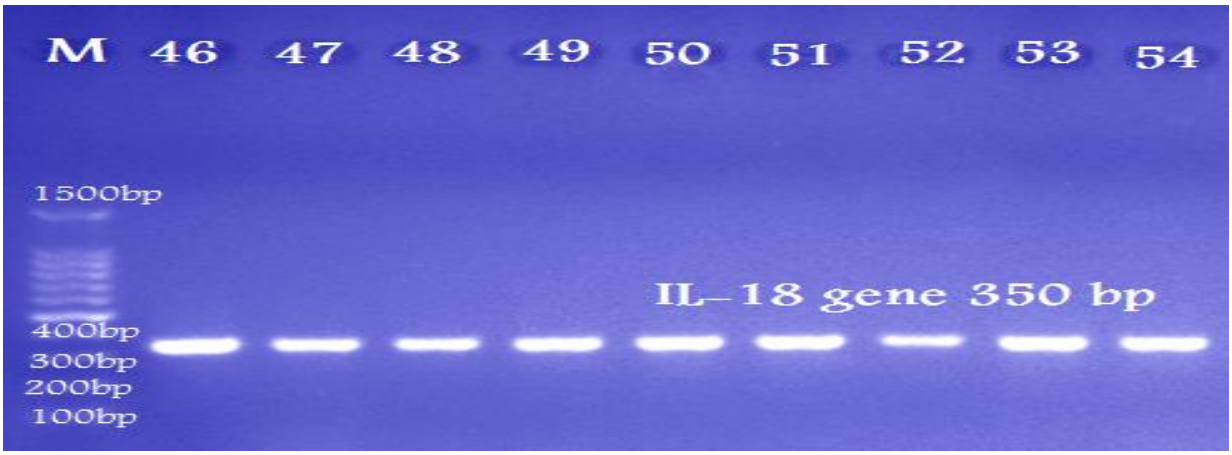


Figure (3-4): RedSafe nucleic acid staining solution agarose gel of monplex PCR amplified products from whole blood extracted DNA and amplified with IL-18 genes primers The electrophoresis was carried out for 1 hour at 75 volts. Lane (M) is a DNA molecular size marker (100 bp ladder), and Lanes (46- 54 are diffrant sampls) have IL-18 positive results (350bp).

The second selected fragment of the gene has a size of 350 bp and this region extends from the whole gene from position 23715 to 24065 and in the non-coding UTR 3 (Untranslated region) at the end of the Interleukin-18 gene.

Fragment "B"		**Product Size**
Forward	**5'-TCCCGAAGCTGTGTAGACTGCA-3'**	
Reverse	**5'-AAGAGGTACAGGTTTTGGAAGGCA-3'**	**350**

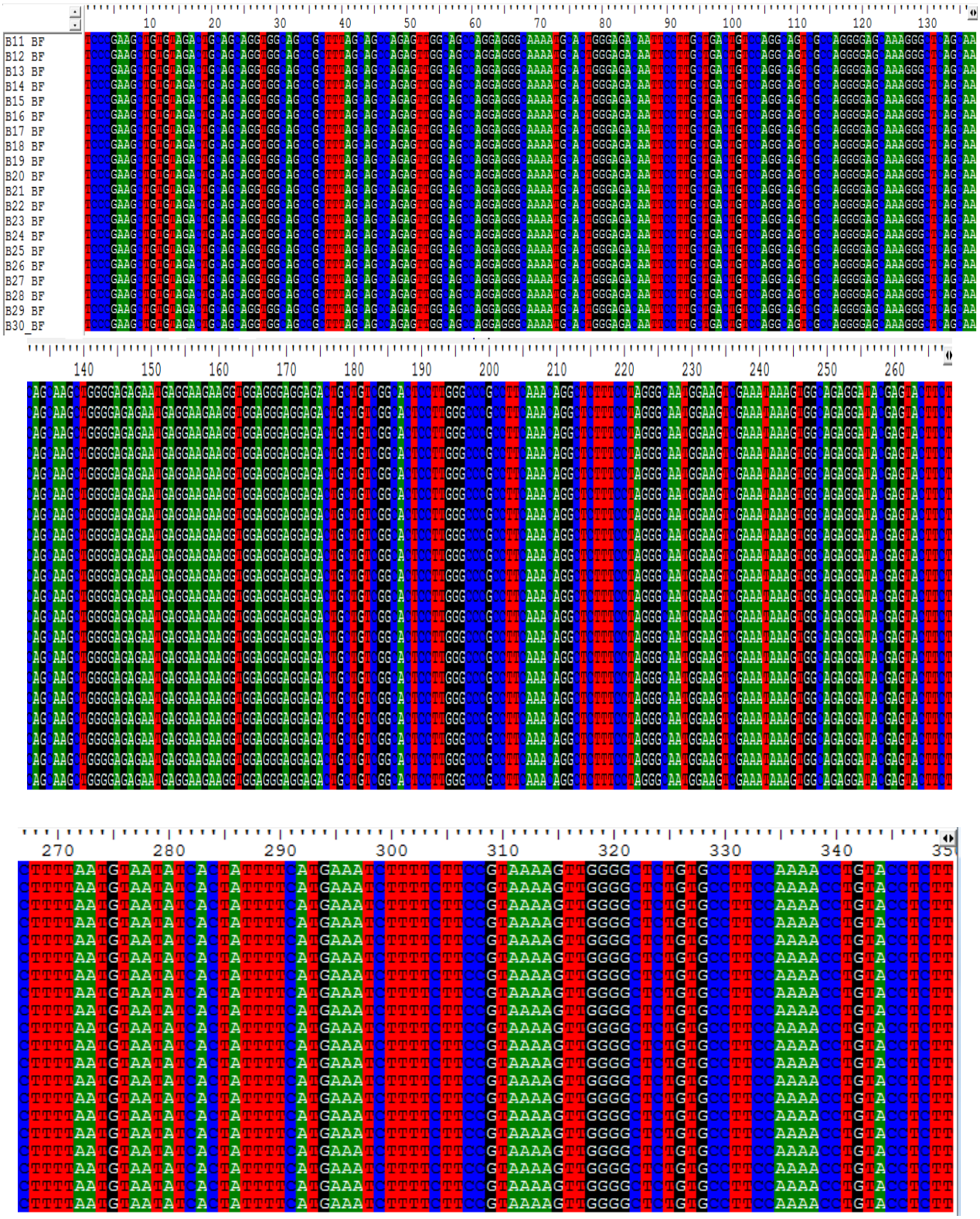
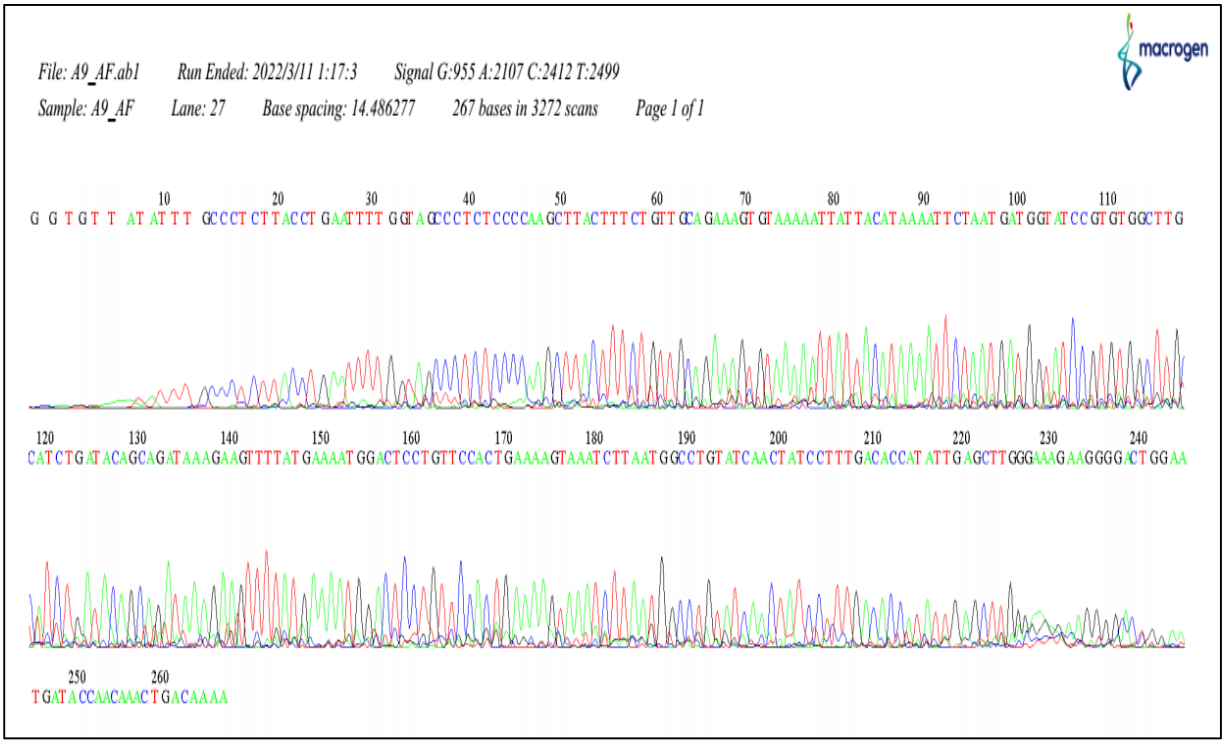


Fig.(3.11) Alignment Results for "B" Fragment by Bioedit Program V.7.2.6 (350 bp).

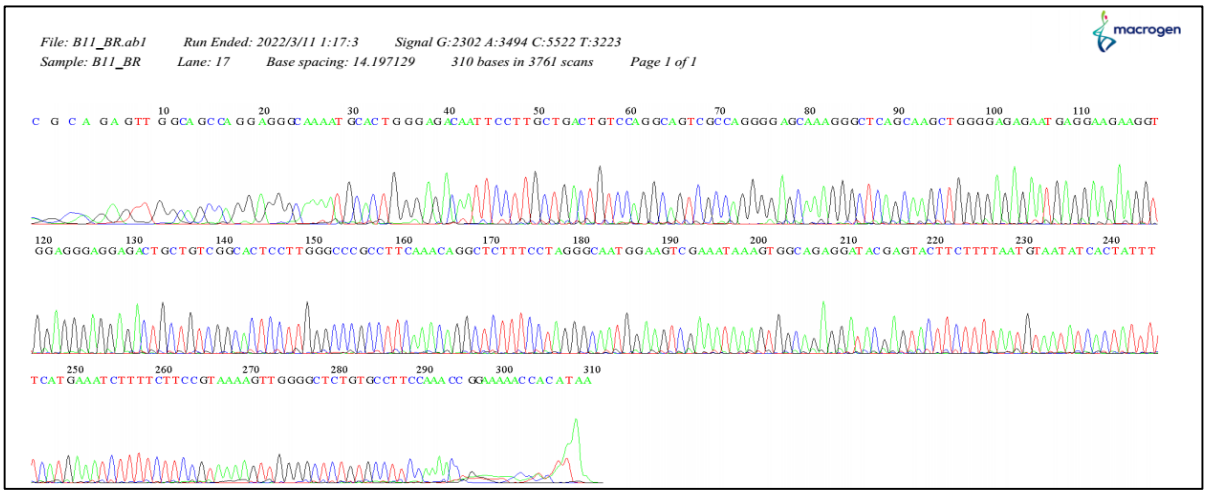
Table. (3-12) Alignment Results for "B" Fragment by Clustal Omega

```
B11_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B12_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B13_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B14_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B15_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B16_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B17_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B18_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B19_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B20_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B21_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B22_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B23_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B24_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B25_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B26_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B27_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B28_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B29_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
B30_BF      TCCCGAAGCTGTGTAGACTGCAGCAGGTGGCAGCCGCTTTAGCAGCCAGAGTTGGCAGCC    60
            ************************************************************

B11_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B12_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B13_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B14_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B15_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B16_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B17_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B18_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B19_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B20_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B21_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B22_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B23_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B24_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B25_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B26_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B27_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B28_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B29_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
B30_BF      AGGAGGGCAAAATGCACTGGGAGACAATTCCTTGCTGACTGTCCAGGCAGTCGCCAGGGG    120
            ************************************************************

B11_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B12_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B13_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B14_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B15_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B16_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B17_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B18_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B19_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B20_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B21_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B22_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B23_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B24_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B25_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B26_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B27_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B28_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B29_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
B30_BF      AGCAAAGGGCTCAGCAAGCTGGGGAGAGAATGAGGAAGAAGGTGGAGGGAGGAGACTGCT    180
            ************************************************************
```

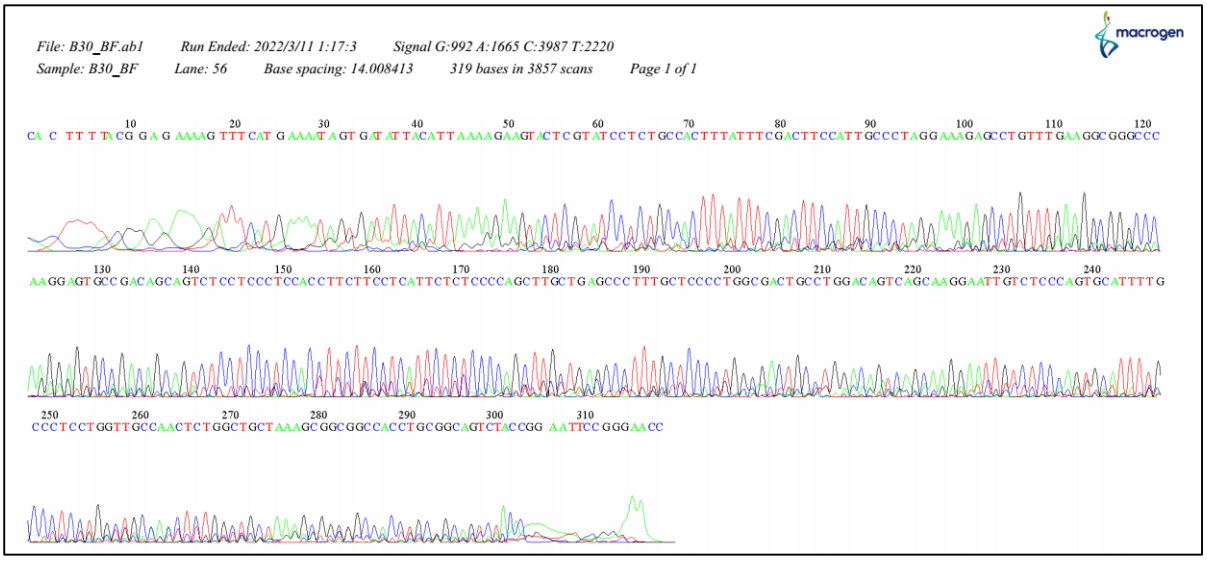
```
B11_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B12_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B13_B       GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B14_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B15_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B16_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B17_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B18_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B19_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B20_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B21_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B22_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B23_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B24_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B25_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B26_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B27_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B28_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B29_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
B30_BF      GTCGGCACTCCTTGGGCCCGCCTTCAAACAGGCTCTTTCCTAGGGCAATGGAAGTCGAAA    240
            ************************************************************

B11_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B12_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B13_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B14_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B15_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B16_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B17_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B18_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B19_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B20_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B21_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B22_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B23_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B24_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B25_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B26_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B27_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B28_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B29_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
B30_BF      TAAAGTGGCAGAGGATACGAGTACTTCTTTTAATGTAATATCACTATTTTCATGAAATCT    300
            ************************************************************

B11_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B12_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B13_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B14_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B15_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B16_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350

B17_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B18_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B19_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B20_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B21_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B22_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B23_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B24_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B25_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B26_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B27_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B28_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B29_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
B30_BF      TTTCTTCCGTAAAAGTTGGGGCTCTGTGCCTTCCAAAACCTGTACCTCTT    350
            ************************************************
```



Appendix (3.16) Fragment A Forward



Appendix (3.17) Fragment A Reverse



4.1. Discussion:

This research would include (100) subject matters & characterized demographic and medical features like age, gender, mean body mass, smoking, drinking habits, schooling, level of income, and position in relation to gastric cancer. The research team included 65 males (65%), compared to 35 females (35%). The mean lifespan has been 53.9 ±10.8 years. And It is striking that through collecting samples and observing the percentage of infection, it was noted that the percentage of infection in the inhabitants of villages and rural areas is higher than the percentage of cities, And In other studies, infection with bacteria was generally observed in childhood, with ulcers appearing later in life. In fact, nearly half of all 12 US adults over the age of 60 are infected with H. pylori, but only a small percentage of those infected develop ulcers. However, the situation in Saudi Arabia is different from the situation in the United States and other developed countries.

And, according to a study performed in the KSA , the overall prevalence in the younger aged group seems to be similar to many other research in KSA , but scientists in the southern area of KSA demonstrated that now the prevalence rate of Helicobacter pylori infection seems to be nearly the same in various ages groups. When compared to girls patient populations, with us female patients had a higher incidence of Helicobacter pylori infection (70percent). (58 percent). Neither any native research was able to demonstrate this female predominance of Helicobacter pylori infections. It could be a coincidence, or it could necessitate some other research with a bigger sample size. In our PUD patient populations, the proportion of nonsmokers has been relatively high 111 (84.1percent) than that of people who smoke 21 (15.9 percent). As just a consequence, the smoking rate and PUD has produced a contradictory results. This could be linked to the fact that smoking seems to be more constrained in the KSA than in other countries. In comparison to the amount of people who smoke between many PUD patients, H. pylori infection was much more prevalent in smokers (61 percent) than in nonsmokers (52 percent). Several more local and international researches have found a link between smoking & Helicobacter pylori infections.

Most of the studies that have been conducted in various countries have been the incidence of H. pylori infection is variable through various ages or through the physical structure of people or through the economic status of some of them and this is observed in several countries in Africa, for example.

Also Infectious diseases are more prevalent in underdeveloped countries. 90 percent of the adult population in nations with poor sanitation can be infected.

Infection is currently far less common in Australia than it was in the past, especially among the younger people.

For example, in another study in Australia, H. pylori is found in approximately 40% of Australians over the age of 60. H. pylori infection is more common in indigenous Australians than in non-indigenous Australians. H. pylori is also more prevalent in particular ethnic groups (e.g. Middle Eastern, Asian and eastern European). The infection rate does not differ between males and women.

the focus of this research was to see if there was a link between Interlikeun-18 gene polymorphisms and H. pylori infection susceptibility.

The major immune cell reaction in stomach mucosa caused by Helicobacter pylori infection has been associated with the production of several pro inflammatory cytokines related to the growth of Helicobacter pylori associated illnesses. [109,114].

Interleukin-18, which is typically producing via activated monocytes/macrophages in the local ecosystem, seems to be an important pro inflammatory cytokine that's been noticed in several facets of inflammation and Th1 reactions [115,117], and also was rised in Helicobacter pylori infections [119,126]. The preponderance of Helicobacter pylori infection differs by country. The severity and category of Helicobacter pylori-associated inflammation and illnesses change based on whether the province has a rising or falling prevalence of Helicobacter pylori infections [109,110]. As a result, both genes and ecosystem factors may play a role in the vulnerability and actual result of H. pylori infection. Various vulnerability genes and external conditions strongly affect Helicobacter pylori infections, and no single gene or external factors has a major impact on vulnerability to Helicobacter pylori infections [118,126] .

In this study found mutant heterozygous (AC) " rs 1946519 genotype " and (TG) "rs 19465189" were associated with higher levels of IL-18 and severe gastric inflammation compared with other genotypes , While in other study found , When tried to compare to certain other genetic variants in Helicopter pylori-infected patient populations, the CC genotype at location "607A/C" as well as the GG genotype at location "137G/C" have been associated with higher levels of Interleukin-18 and serious stomach inflammation. [125,126] As a result, Interleukin-18 genetic variations could modify the capabilities of Interleukin-18 producing and might even take an active part in host vulnerability and the results of Helicopter pylori infection, which will necessitate numerous additional researches.

Yet another research [125] found that even in the Iranian population, the pervasiveness of the AA genotype as Well as A allele at position "607C/A", although not at location "137G/C", have been substantially lower in Helicobacter pylori-infected duodenal ulcer patient populations than in Helicobacter pylori-negative subjects for interleukin-18 promoter polymorphisms at locations "137G/C and 607C/A". This disparity could be linked to a variety of variables, such as ethnic variability in interleukin-18 genotype dispersion, that also varies across racial communities, sample size,

medical heterogeneity, as well as the types of external factors involved in the pathogenesis of H. pylori infection.

Another study on just an Helicobacter. pylori-infecting Korean sample of the people The haplotype frequency bands have been used to study the genetic connection among these 5 SNPs, as well as the haplotype analysis revealed that such protecting haplotype CGT (137C/ + 113G/ + 127T) was much more common in the Helicobacter pylori negatively groups than that of the Helicobacter. Pylori positively groups.

The above findings imply that all these three loci could have a synergistic impact on Helicobacter pylori infections. More workable study on such SNPs has been needed.

With us research results were still not definitive as it must be determined regardless of wether that there's no substantial differences or whether the sample size seems to be insufficient to find out the variaions. Helicobacter pylori subjects seem to be scarce, particularly in mid-aged or seniors healthcare cohorts.

It's the first study to look at the link among gene changes in the Interleukin-18 gene as well as vulnerability to Helicobacter. pylori infections in a highly populated. Our research, even so, has many constraints.

Initially, our research population seemed to be limited, which could have influenced a few of the findings, particularly the absence of connection among Helicobacter pylori associating specific illness phenotypes. Second, humans didn't even look into the relationship among Interleukin-18 level and Interleukin-18 Genetic polymorphism. Third, with us research was limited to a specific community. Finally, neither any extra reproduction with an unbiased testing carried out. As a consequence, large scale, good designed research must be regarded in order to verify our findings, avert selection bias like potential racial disparities, and protect against the bias of repeating testing impacts.

As observe the effectiveness of interleukin-18, its activity, its role in enhancing immunity, and the percentages that we notice increase when there are any changes that occur, especially when an infection occurs, as is the case in infection with H pylori infection .

When we observe healthy people and the level of interleukin 18, and when we observe others infected with H pylori infection , we notice an increase in the levels of interleukin (18) Perhaps the occurrence of a polymorphism in interleukin 18 gives a high genetic. predisposition to infection with Helicobacter pylori infection, but the severity of infection is low, that is, not severe.And H. pylori infection is one of the causes of interleukin 18 polymorphism and It should be known that people with H. pylori who have interleukin-18 polymorphism have a genetic predisposition compared to people who do not have interleukin-18 polymorphism.

Inflammatory cells infiltrate the stomach mucosa after infection with Helicobacter pylori, and their migration and activation are thought to be dependent on H. pylori-induced generation of proinflammatory cytokines [127].

We expected that IL-18 would play a role in the process because the Th1 response is thought to be prevalent in H. pylori-infected gastric mucosa. However, the impact of H. pylori infection on IL-18 production is unknown, as one study found that antral, but not corporal, Interleukin-18 mRNA levels were up-regulated during H. pylori infection [128], while another found that mucosal Interleukin-18 mRNA levels were unaffected by H. pylori infection [33].

T lymphocytes, thymocytes, and natural killer cells are all affected by IL-12, which increases the production of Interleukin -18 receptors. The role of Interleukin-18 in the polarizations of the Th1 reaction appears to be reliant on the expression of the IFN- and IL-12 receptor 2 chains. In cytokine biology, the generation of IFN-γ by the mixture of IL-18 and Interleukin -12 was an instance of real synergisms, identical to the synergisms of Interleukin-1and TNF- in inflammation replicas.

Even though IFN-γ was the "signature" cytokine of "CD4+ & CD8+ T "cell, and normal cell. IFN-γ production is thought to be responsible for much of IL-18's biology . All the results that we observe are positive, for example, gene 350,

all results were positive except for sample No. 19, and this is a very high percentage indicating the extent of its effectiveness. While we note in the 290 gene also the high positive percentage, except for samples 41, 48, 49, 51, 52, 53 and 54 only, it was do not work with interleukin 18 gene 290 .

Through studies, we note that H. pylori infection regulates the production of interleukin-18, that interleukin-18 contributes significantly to the processes of immune regulation, and we note the increase that occurs and this is clear in the above results,

Interleukin-18 values were observed in gastric mucosal biopsy samples and also separated gastric endothelial cell & mononuclear cells from the basal lamina.

Interleukin-18 levels in gastric epithelial cell and the monocyte cells line THP-1 result is a unique with Helicobacter pylori have been evaluated. Helicobacter pylori-infecting epithelial cell and monocytes reported to produce more Interleukin-18 in both systems. Gastric mucosa diseased with Helicobacter pylori, the degree of gastric inflammation was tightly connected to Interleukin-18 levels, suggesting that Helicobacter pylori-induced Interleukin-18 shows a substantial part in stomach damage.

Interleukin-18's function in H. pylori-induced inflammation in humans is not well defined. Despite mature Interleukin-18 protein is present in both infected and non - infected individuals' mucosa, thus according to Tomita et al. [34], antral Interleukin-18 mRNA levels were increased in Helicobacter pylori infections.

Interleukin-18 production is related with antral H. pylori infection as assessed by immunohistochemistry, According to

Fera et al. [32], Interleukin-18 mRNA is produced regardless to H. pylori infections.

The cause of the disparity is unknown; however, one explanation could be the nonquantitative character of mRNA and protein level analyses.

Despite the fact that the exact mechanism and pathogenic processes underlying H.pylori-related illnesses remain unknown, studies confirm that these diseases are also influenced by stimulated immune reactions, with inflammatory responses impacted by both ecological and host genetic factors Infection with H. pylori triggers signaling pathways processes in the stomach mucosa, which help in the formation of pro inflammatory cytokine & certain others associated gene, as well as the switch to the T-helper1 (Th1) responses. (3,4,5,6) .

SNPs of putative genes implicated in the immune and inflammatory responses have been examined extensively as genetic variables that confer H. pylori infections vulnerability. Moreover, a connection between Interlikeun-18 gene polymorphisms & Helicobacter pylori infections sensitivity was yet to be established.

CONCLUSIONS

Perhaps the occurrence of a polymorphism in interleukin 18 gives a high genetic predisposition to infection with Helicobacter pylori infection, but the severity of infection is low, that is, not severe ; H. pylori infection is one of the causes of interleukin 18 polymorphism ; It should be known that people with H. pylori who have interleukin-18 polymorphism have a genetic predisposition compared to people who do not have interleukin-18 polymorphism ; The genetic sequencing test of the samples of patients who were examined showed that no changes occurred at the level of the two genes that were examined in Al-Rifai city.

REFERENCES

1. Lachheb J, Chelbi H, Ammar J, Hamzaoui K, Hamzaoui A. Promoter polymorphism of the IL-18 gene is associated with atopic asthma in Tunisian children. Int J Immunogenet. 2008;35:63-68. [PubMed] [DOI] [Cited in This Article: 1] [Cited by in Crossref: 16] [Cited by in F6Publishing: 9] [Article Influence: 1.1] [Reference Citation Analysis (0)].
2. Smith AJ, Humphries SE. Cytokine and cytokine receptor gene polymorphisms and their functionality. Cytokine Growth Factor Rev. 2009;20:43-59. [PubMed] [DOI] [Cited in This Article: 1] [Cited by in Crossref: 218] [Cited by in F6Publishing: 191] [Article Influence: 15.6] [Reference Citation Analysis (0)].
3. Purification and characterization of the human interleukin-18 receptor
4. J. Biol. (1997). Chem. K. Torigoe et al. Defective NK cell activity and Th1 response in IL-18-deficient mice
5. Immunity (1998). K. Takeda et al. Systemic production of interferon-gamma inducing factor (IGIF) versus local IFN-gamma expression involved in the development of Th1 insulitis in NOD mice
6. J. Autoimmun. (1997). H. Rothe et al. Regulation of human IL-18 mRNA expression Clin. Immunol. (1999). J.D. Marshall et al.
7. Differential induction of interleukin-12, interleukin-18, and interleukin-1beta converting enzyme mRNA in experimental autoimmune encephalomyelitis of the Lewis rat J. Neuroimmunol. (1998). S. Jander et al.
8. Interferon-gamma-inducing factor, a novel cytokine, enhances Fas ligand-mediated cytotoxicity of murine T helper 1 cells
9. Cell. Immunol. (1996). T. Dao et al Single-step method of RNA isolation by acid guanidinium thiocyanate–phenol–chloroform extraction Anal. Biochem. (1987). P. Chomczynski et al.
10. Involvement of caspase-1 and caspase-3 in the production and processing of mature human interleukin 18 in monocytic THP.1 cells
11. J. Biol. Chem. (1997). K. Akita et al.CCR5(+) and CXCR3(+) T cells are increased in multiple sclerosis and their ligands MIP-1alpha and IP-10 are expressed in demyelinating brain lesions
12. Proc. Natl. Acad. Sci. USA (1999). K.E. Balashov et al. A rapid and versatile method to synthesize internal standards for competitive PCR Nucl. Acids Res. (1993) . F.S. Celi et al.
13. IL-18 promotes type 1 cytokine production from NK cells and T cells in human intracellular infection J. Immunol. (1999). V.E. Garcia et al.
14. Caspase-1 processes IFN-gamma-inducing factor and regulates LPS-induced IFN-gamma production Nature(1997). T. Ghayur et al.
15. Kinoshita, M.; Miyazaki, H.; Ono, S.; Seki, S. Immunoenhancing therapy with interleukin-18 against bacterial infection in immunocompromised hosts after severe surgical stress. J. Leukoc. Biol. 2013, 93, 689–698. [CrossRef]
16. Kinoshita, M.; Seki, S.; Ono, S.; Shinomiya, N.; Hiraide, H. Paradoxical effect of IL-18 therapy on the severe and mild Escherichia coli infections in burn-injured mice. Ann. Surg. 2004, 240, 313–320. [CrossRef].
17. Kinoshita, M.; Kuranaga, N.; Matsumoto, A.; Ono, S.; Shinomiya, N.; Hiraide, H.; Seki, S. Multiple interleukin-18 injections promote both mouse Th1 and Th2 responses after sublethal Escherichia coli

infection. Clin. Exp. Immunol. 2006, 143, 41–49. [CrossRef].

18. Kinoshita, M.; Shinomiya, N.; Ono, S.; Tsujimoto, H.; Kawabata, T.; Matsumoto, A.; Hiraide, H.; Seki, S. Restoration of natural IgM production from liver B cells by exogenous IL-18 improves the survival of burn-injured mice infected with Pseudomonas aeruginosa. J. Immunol. 2006, 177, 4627–4635. [CrossRef] [PubMed].
19. Kinoshita, K.; Yamagata, T.; Nozaki, Y.; Sugiyama, M.; Ikoma, S.; Funauchi, M.; Kanamaru, A. Blockade of IL-18 receptor signaling delays the onset of autoimmune disease in MRL-Faslpr mice. J. Immunol. 2004, 173,5312–5318. [CrossRef]
20. Kinoshita, M.; Miyazaki, H.; Ono, S.; Inatsu, A.; Nakashima, H.; Tsujimoto, H.; Shinomiya, N.; Saitoh, D.; Seki, S. Enhancement of neutrophil function by interleukin-18 therapy protects burn-injured mice from methicillin-resistant Staphylococcus aureus. Infect. Immun. 2011, 79, 2670–2680. [CrossRef] [PubMed].
21. Yoshimoto T, Takeda K, Tanaka T, et al. IL-12 upregulates IL-18 receptor expression on T cells, Th1 cells and B cells: synergism withIL-18 for IFN_ production. J Immunol 1998;161:3400 –7.
22. Kim SH, Reznikov LL, Stuyt RJ, et al. Functional reconstitution and regulation of IL-18 activity by the IL-18R beta chain. J Immunol 2001; 166:148 –54.
23. Neumann D, MartinMU.Interleukin-12 upregulates the IL-18Rb chain in BALB/c thymocytes. J Interferon Cytokine Res 2001;21:635– 42.
24. Lugo-Villarino G, Maldonado-Lopez R, Possemato R, Penaranda C, Glimcher LH. T-bet is required for optimal production of IFN-gamma and antigen-specific T cell activation by dendritic cells. Proc Natl Acad Sci U S A 2003;100:7749 –54.
25. Hofstra CL, Van Ark I, Hofman G, Kool M, Nijkamp FP, Van Oosterhout AJ. Prevention of Th2-like cell responses by coadministration of IL-12 and IL-18 is associated with inhibition of antigen-induced airway hyperresponsiveness, eosinophilia, and serum IgE levels. J Immunol 1998;161:5054–60.
26. Yoshimoto T, Tsutsui H, Tominaga K, et al. IL-18, although antiallergic when administered with IL-12, stimulates IL-4 and histamine release by basophils. Proc Natl Acad Sci U S A 1999;96:13962– 6.
27. Hoshino T, Yagita H, Ortaldo JR, Wiltrout RH, Young HA. In vivo administration of IL-18 can induce IgE production through Th2 cytokine induction and up-regulation of CD40 ligand (CD154) expression on CD4_ T cells. Eur J Immunol 2000;30:1998 –2006.
28. Kawase Y, Hoshino T, Yokota K, et al. Exacerbated and prolonged allergic and non-allergic inflammatory cutaneous reaction in mice with targeted interleukin-18 expression in the skin. J Invest Dermatol 2003; 121:502–9.
29. Fox, J. G. 2002. The non-*H. pylori* helicobacters: their expanding role in gastrointestinal and systemic diseases. Gut 50:273–283.
30. Solnick, J. V., and D. B. Schauer. 2001. Emergence of diverse *Helicobacter* species in the pathogenesis of gastric and enterohepatic diseases. Clin. Microbiol. Rev. 14:59–97.
31. Lutty GA. Effects of diabetes on the eye. Invest Ophthalmol Vis Sci. 2013; 54(14): ORSF81-7.
32. Mohammed M. A. Al-Fayadh1, Maani N. Al-Shemari1 and Ihsan E. Al-Saimary . Molecular characterization of antigens extracted from hydatid cysts of human and other intermediate hosts . Journal of Microbiology and Antimicrobials.2010. Vol. 2(7), pp. 76-82. https://scholar.google.com/citations?user=_kOoApsAAAAJ&hl=en
33. Adnan Jawad Ahmed , Afrah Ali abd Al amer and Mohammed Mousa Atta . Inhibition Effect Of Pomegranate And Orange Peel Extract On The Growth Of Staphylococcus Aureus From Cheese . Nat. Volatiles & Essent. Oils, 2022; 9(1): 532-540. https://scholar.google.com/citations?user=_kOoApsAAAAJ&hl=en
34. Hamadi Aabttan Al-Hilali and Mohammed Mousa Atta . Measurements of Some Asthma Markers (IgE, IFNγ, IL-4 IL) by ELISA technique and FOXP3 and IL-10 Expression in Asthmatic Patients. Int.J.Curr.Microbiol.App.Sci (2016) 5(12): 903-909. https://scholar.google.com/citations?user=_kOoApsAAAAJ&hl=en.