

# Biological Features of Local Helicobacter Pylori Strains

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## Abstract

H.pylori is variable in all aspects – from genetically profile, to biological features. It is established they differ in relation to geographical regions, sex, age ethics, social and economical characteristics. Because of changing of spread and different biological features of this bacterium. This effects on the clinic of difference diseases. The study of peculiarities of H.pylori strains has the specific theoretical and practical value in regions the entire world. There was no study about this problem in Georgia. This article shows the biological properties of local H.pylori strains obtained from patients with chronic gastritis, peptic ulcer disease and gastric cancer. The biopsy specimens and resection materials were taken during the operation or endoscopies procedures. The study of biological features of H.pylori was performed by recently applied methods. Strains have typical morphological, cultural and biochemical features, less of them have some particularities.

**Keywords:** *helicobacter pylori, local strains, biological features*

## Introduction

Gastroduodenal diseases are associated with Helicobacter pylori (Hp) infection in most cases [3]. Nowadays due to wide spread of more than 50% of world population are infected with this bacterium. Presence of Hp is associated or is considered as a main etiological factor in pathogenesis of chronic gastritis type B, peptic ulcer disease, MALT-lymphoma and gastric cancer, which is a second cause of death in population [1]. Hp shows a highly diverse nature in all aspects, from gene profiles to biological features. These characteristics of Hp may explain some conflicting results regarding the pathogenicity of Hp in human diseases [5].

## Aim of Study

Because of no studies have shown the biological properties of Hp strains in Georgia, we studied their cultural, tinctorial, morphological, biochemical properties.

## Materials and Methods

We have examined 157 patients with different gastroduodenal diseases (chronic gastritis, peptic ulcer diseases, gastric cancer). The biopsy specimens and resection materials were taken during the operation or endoscopy procedures.

The study of biological features of Hp were performed by recently applied methods [2,4]. The data were processed by Student's variation system.

## Results

There were 107 strains of Hp obtained from 157 patients (68,15±20,30%) biological properties of Hp is given in *Tab.1*. Hp strains have thin, colorless, translucent, round colonies with 1-3 mm diameter in the solid selective media (Columbia agar, Campilobacter agar, Mueller-Hinton II agar), in 97,19±3,86% cases. Bacteria were spirals in 59,81±4,74% and V-like - in 80,37±3,84% cases.

*Tab.1 Biological features of H.pilory. n=107*

Ability of  $\alpha$ -hemolysis have  $80,37\pm 3,84\%$  of strains. Temperatural tests show, that all strains were growth in  $37^{\circ}\text{C}$  and nothing - in  $25^{\circ}\text{C}$  and  $42^{\circ}\text{C}$ . In microaerophilic conditions were growth  $97,19\pm 3,86\%$  and in anaerobic conditions - only  $3,73\pm 1,89\%$  of Hp strains. Tinctorial sings show, that all Hp strains were gram-negative.

We studied some biological signs for final identification of local Hp strains. It was appeared, that all strains were catalase-, oxidase-, urease-positive, and nothing have ability of production of  $\text{H}_2\text{S}$  and fermentation of carbohydrates. Resistance to nalidixic acid have  $67,28\pm 4,53\%$  and to cephalotin - all strains were resistant.

## Discussion

## References

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The above-stated data, obtained by us, the Hp infection in patients with chronic gastritis, peptic ulcer diseases and gastric cancer was in  $68,15\pm 20,30\%$  cases. The study of biological features of local Hp strains shows, that the tinctorial, morphological, cultural and biochemical features are typical enough, less of them have some peculiarities.

## Conclusion

According to our data, there was a high prevalence of Hp strains in patients with different gastro duodenal diseases (chronic gastritis, peptic ulcer diseases, gastric cancer). The biological features of local Hp strains are typical in more cases, but have some peculiarities

# Биологические свойства грузинских штаммов Helicobacter pylori

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## РЕЗЮМЕ

Бактерия *H. pylori* многообразна во всех аспектах начиная от генетического профиля до биологических свойств. Установлено, что по географическим регионам, полу, возрасту, обычиям, этнической принадлежности, социально-экономическим особенностям и другим факторам, резко изменяются распространение и различные биологические свойства этого микроорганизма, что влияет на своеобразие клинической картины при различных патологиях. Исходя из этого, изучение особенностей местных штаммов *H. pylori* имеет определенное теоретическое и практическое значение во всех регионах мира, а в Грузии этот вопрос не изучен. Исследованы биологические свойства местных штаммов *H. pylori*, выделенных от больных различными гастродуоденальными заболеваниями (хронический гастрит, пептическая язвенная болезнь, рак желудка). Больные в  $68,15\pm 20,30\%$  были инфицированы *H. pylori*. Местные штаммы *H. pylori* в основном были типичными по своим культуральным, тинкториальным, морфологическим и биохимическим свойствам, хотя отдельные - атипичными.

**Ключевые слова:** *H. pylori*, местные штаммы, биологические свойства