

Effect of lemon oil concentrate *Cymbopogon citratus* ERILIM® towards the *Helicobacter pylori* bacteria: A Case Report

Abstract

This research is based on the effect of the lemon tea concentrate whose polyphenols are powerful antioxidants. Studies have shown that they suppress free radicals in a more effective way than vitamins C or E; in some of cases, specifically in *H. pylori*, which generally colonizes the human stomach as a single strain with stable characteristics. Authors mention that this colonization can be stable throughout life. This bacterium is related to chronic gastritis, and although *H. pylori* infection is still the main cause of duodenal and gastric ulcers, the prevalence of ulcers associated with *H. pylori* is decreasing, while that of related ulcers with non-steroidal anti-inflammatory drugs (NSAIDs) is increasing. Much of what has been published lately about *H. pylori* and has focused on its important changes in the pattern of the disease and in the potential value of eradication therapy.

Key words: *Helicobacter pylori*, effect, lemon tea, chronic gastritis, treatment.

Introduction

In Mexico, currently two of the most frequent health problems are chronic gastritis and chronic gastrointestinal reflux disease. It is believed that this is due to the average Mexican diet because Mexican people tend to eat spicy and bladder – irritating foods (ranging from citric to spicy sauces that directly irritate the gastric mucosa). However, is the Mexican diet really the cause of these symptoms? Gastritis "is any inflammatory lesion that affects the gastric mucosa" ⁽¹⁾. Chronic gastritis consists of nonspecific inflammation of the gastric mucosa of progressive and long evolution, with a multiple etiology that is characterized by presenting chronic histological lesions. Its main location is in the antrum and in the gastric body. The main etiologic agent is *Helicobacter pylori* infection ⁽²⁾.

It is accepted that the prevalence increases in underdeveloped countries that have a poor health system and decreases in developed countries with a high level of health and socioeconomic status. In Mexico, overall health and well-being measures can be deficient, which without a doubt compromises the health of the population. According to statistics, gastritis affects 80% of

Mexicans and is more susceptible in women than in men, it also occurs frequently in individuals between 20 and 54 years old⁽³⁾.

Helicobacter pylori is a common bacterium in underdeveloped countries such as Mexico. It is currently a major health problem that affects all populations of all ages and gender; In Mexico, more than 90% of patients who have chronic gastritis have proved to have developed it due to this causative agent. As this condition arises and without determining an exact diagnosis of chronic gastritis due to *H. pylori*, more serious complications can be reached, ranging from ulcers to gastric adenocarcinomas. The treatments employed to fight the bacteria tend not to be very effective because of the medium in which the bacteria live, which is precisely the stomach.

The stomach has highly acidic pH, which usually decreases the effectiveness of antibiotics and other meds. This research aims to assess the effects of the lemon oil concentrate towards *Helicobacter pylori* administered through an easily obtainable effective treatment that does not harm the stomach lining⁽⁴⁾.

It is worth mentioning that *Helicobacter pylori* is a curved, Gram negative, flagellated, non-invasive microaerophilic bacterium. It is highly adapted to its environment, so that it overcomes all the barriers of the gastric mucosa, penetrates the mucus, adheres to the gastric cells, evades the immune response and colonizes the mucosa. The virulence factors of this bacterium are the flagella that allows mobility and adhesion in the gastric mucosa. The urease allows to produce ammonium and neutralizes gastric acids and other enzymes such as phospholipids and superoxide dismutase, elements which play a key role when it comes to preventing the immune response, leading to inflammation of the mucosa⁽⁴⁾.

The incidence of infection increases with the possibility of exposure and, therefore, with age. In Mexico a seroprevalence of 70% for HP in 11605 blood samples of people of various ages (1 to 90 years of age) was detected⁽⁴⁾. In this same series, at the age of one year, 20% of children were positive. In addition to this, there are several studies in developing countries that show that a significant percentage of children under two years of age are already infected.

It is worth to note that acquired infection that occurs during childhood, may remain asymptomatic or become symptomatic in adulthood. This means that memory immunity is not produced in early stages and reinfection usually occurs. *H. pylori* is easily transmitted in the family environment, having found it in the dental bacterial plaque, the human stomach is considered a reservoir. Its transmission is discussed and there is talk of a transmission from

person to person in developed countries, or through the use of water contaminated foods with feces, where it can remain viable for many days^(5,13,14,15).

Once *H. pylori* has stricken the symptoms range from acute to chronic. At the beginning of the infection, the disease can be asymptomatic or symptomatic, depending on the number of bacteria colonizing the gastric mucosa. The symptoms are gastritis, dyspepsia, gastroesophageal reflux and pain in the epigastrium. However, these symptoms can become chronic, progressive and of enormous evolution; the mucosa is injured so much that gastric ulcers, internal bleeding and even a gastric lymphoma associated with MALT can occur^(6,7,8).

Gastric MALT lymphoma represents 5% of all gastric cancers and less than 50% of all gastric lymphomas, which makes it the most frequent gastrointestinal tract lymphoma. For its association with *Helicobacter pylori*. MALT lymphoma represents a fascinating model of the close pathogenic link between chronic inflammation and lymphoma development⁽⁷⁾.

There are currently several drugs that fight *H. pylori*, however none of these eradicates it at 100%. On the contrary, the bacterium tends to become even more resistant to these. After a patient is diagnosed with *H. pylori* and a positive urease breath test is performed, a variety of drugs are prescribed in order to inhibit the acidity of gastric juices so that antibiotics can combat this bacterium. Therefore, Oxyntic cell blockers are used, which are responsible for the production of HCl such as ranitidine and omeprazole. Several antibiotics that have been good to combat this bacillus are tetracycline, clarithromycin and metronidazole. The efficacy of the various therapeutic schemes is available, both first and second line. They were taken into account for this systematic review to define the optimal treatment towards *H. pylori* which causes symptoms that can vary significantly worldwide. Nowadays, there is no ideal therapeutic strategy to eradicate *H. pylori* infection in 100% of cases^(8,10). The system of treatments for this Gram-negative bacterium is not the best. Thus, a more successful treatment, accessible and without adverse effects is explained as follows in this research.

H. pylori is responsible for 90% of cases of chronic gastritis and is related to the first cause of a gastric adenocarcinoma. This is an important issue for public health in Mexico as it is the duty of doctors to prevent, diagnose and give good treatment to eradicate this problem.



Figure 1. Lemon tea herb *Cymbopogon citratus*

At the University of Guadalajara, in Mexico, the effects of lemon tea herb in its oil concentrate towards *H. pylori* were discovered. The concentrate kills bacteria and relieves symptoms as well as other treatments used for *H. pylori*. According to Jorge Antonio Álvarez Ousset "natural lemon tea extract is not an antacid, but an aldehyde that eliminates the bacterium helicobacter pylori."⁽⁹⁾. Thus, the doubt and the reason for this article arose, to evaluate from a case study the operation and effectiveness of the concentrated lemon tea oil.

Case Presentation

A 38-year-old female patient was interviewed. For the record, she works as a secretary at the Health Institute of the Autonomous University of the State of Hidalgo. The result was the following:

The patient presented the classic symptoms of gastritis for a year, so she went to the doctor, who diagnosed her with chronic nervous gastritis. However, she mentions that the treatment she had been given was only proton pump blockers to decrease HCl production such as omeprazole, but she did not notice improvement and simply gastritis worsened. After a month, the individual went to the gastroenterologist who diagnosed her with severe gastritis. After a month the problem exacerbated, so the specialist performed an endoscopy and observed ulcerations in the stomach mucosa, so he performed a test for suspicion of *H. pylori*. The test was positive urease.

Discussion

"*Helicobacter pylori* (*H. pylori*) infection affects about 50% of the world population and plays a fundamental role in the development of various digestive diseases such as chronic gastritis, peptic ulcer, gastric adenocarcinoma and MALT lymphoma. The growing resistance of bacteria to various antibiotics throughout the world has forced a reformulation of treatment algorithms"⁽¹⁰⁾.

The doctor immediately prescribed antibiotics (clarithromycin) as well as the use of omeprazole to eliminate the bacteria and heal the symptoms. The patient says that the symptoms diminished but she referred that when leaving the treatment pain would intensify again. After 3 months of no healing, she contacted a homeopathy specialist and continued treatment based on a lemon tea oil concentrate. She mentioned treatment consisted on taking a single drop three times a day before each meal for 14 days, and stopped the treatment for 7 days and again took lemon tea concentrate for 14 days more (Figure 2).

After the failure of a treatment with first-line clarithromycin and another with second-line levofloxacin (which is the most common scenario in our setting), bismuth-containing quadruple therapy (PPI, bismuth, tetracycline, and metronidazole)⁽¹⁸⁾ has achieved encouraging results as rescue treatment. For its part, after the failure of a first treatment with clarithromycin and a second quadruple line with bismuth, treatment with levofloxacin is recommended^(11,18). Given the dilemma about the effectiveness of antibiotics, lemon tea oil concentrate represents a treatment opportunity for those people who do not have positive effects on them.

Its prevalence shows a high variability according to geographic region, ethnicity, race, age and factors socioeconomic, among others, high in developing countries⁽¹⁶⁾.

“H. pylori strains from different geographical areas show characteristic very specific phylogeographical. In recent years, new methods have been developed and programs that through molecular techniques such as PCR and genetic analysis such as DnaSP and PopArt, among others, aims to discover the genetic structure of the strains, these have been an important advance in the study of infectious diseases, used for the identification of pathogenic agents, phylogenetic and genealogical analyses, to know the genetic variability applied in diseases and pathologies in different parts of the world”⁽¹⁷⁾.

After a month of taking the oil, the symptoms disappeared and when she went to the doctor another urease test was performed, which turned out to be negative for H. pylori. She said that during the condition "I could not eat more than bread, I lost a lot of weight and could not even sleep because of the intense pain. I took lactobacillus-rich yogurts to lessen the pain. Until I took lemon tea oil, I started a normal life again.

“Currently I can eat everything, but now I try to take care of myself, I no longer eat fats and I also don't eat in the street stands anymore because H. pylori bacteria can be found in contaminated food”.



Figure 2. [The treatment]. Take one drop three times a day before each meal for 14 days, interrupt for 7 days and drink again for 14 days.

Conclusion

After conducting the interview and having knowledge about *H. Pylori* regarding its resistance to antibiotics, it can be established that the effect of the lemon oil concentrate on the *Helicobacter pylori* bacteria is effective given that it completely eliminates it without bringing any side effects, therefore, the ideal treatment to eliminate the bacteria is the lemon tea concentrate.

Limitations

Although the most accurate way to verify the presence of *Helicobacter pylori* is by PCR, in this case study negativity was confirmed by the urease test, a test that is used daily in the health sector, but the negative results and the recovery of their physical condition and their state of health show that the lemon tea concentrate *Cymbopogon citratus*, in the product called ERILIM®, has a positive effect on people who previously had a positive result, a situation that we intend to confirm in future studies.

Competing interests disclaimer:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly used products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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