

Introduction

Probiotics are live microorganisms that, in sufficient quantities, remain active and aim to increase the beneficial microbiota and reduce the presence of pathogenic microorganisms in the gastrointestinal tract (WHO, 2006).

The intestinal microbiota or bacterial flora is the population as a whole of the microbial communities on the surfaces of the mucosa. Each person has about 100 trillion bacteria of 400 different species, and these have an important influence on human immunity and nutrition

Gastrointestinal diseases are those that attack the stomach and intestine, they are generally caused by bacteria, parasites or viruses that are found in certain foods.

Hyphotesis

The concentration of probiotics will present inhibitory effects against *Escherichia coli* in in vitro tests, therefore in the future they may be suggested for treatments against enterobacterial infections related to *Escherichia coli*.

Objetive

Evaluation of the inhibitory effect of probiotics against pathogenic strains of *Escherichia coli* for the suggestion in treatments of infections related to this enteropathogenic bacterium.

Problem Statement

The excessive use of antibiotics produces a disorder in the intestinal microbiota that causes diarrhea due to the alteration and bacterial degradation, its incidence varies depending on the antibiotic ingested.

By reducing the overuse of antibiotics at the population level, it could also help reduce the problem of "drug resistance" that is of great importance today.

According to the WHO, drug resistance is today one of the greatest threats to global health, since it can affect anyone, increasing hospital stays and increasing medical care costs.

Results and Analysis

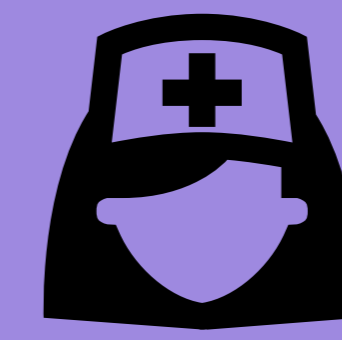
When comparing the bactericidal effect of the antibiotic and the probiotic, it can be affirmed that the selected probiotics are competition for the antibiotic, it can be affirmed that both have bactericidal activity against *E.coli*; Making probiotics active candidates to be a treatment against infections caused by the bacteria.

Research into other probiotics could be suggested to prove their efficacy, which could be equal to or greater than those used in the present study.



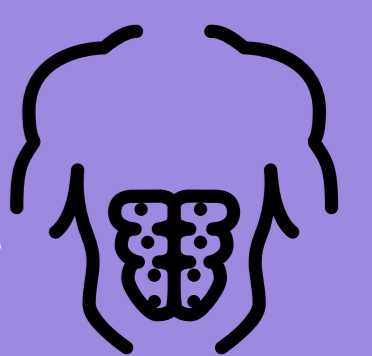
A = Antibiotic
C = Negative control
P1 and P2 = Probiotic 1 and 2

Justification



In Mexico, gastrointestinal diseases are one of the main causes of medical consultation and also one of the first causes of death in Mexico and in the world. (Hernández Cortez, 2011)

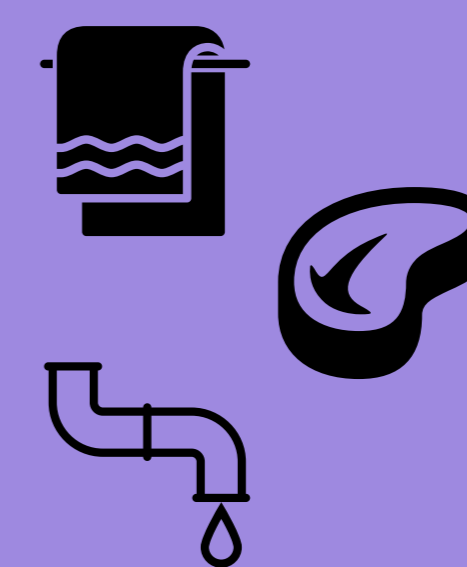
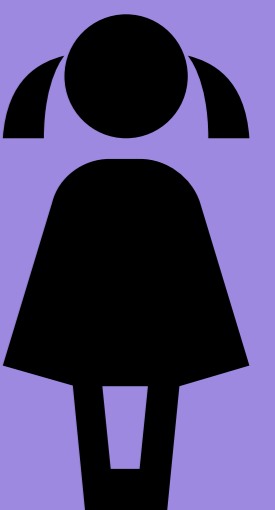
Gastrointestinal diseases are known to have a high prevalence in the human body.



Bacterial resistance reduces the effectiveness of treatments and increases costs and mortality from infectious diseases, being considered a serious public health problem in Mexico and the world (J Wirtz, et.al 2008).

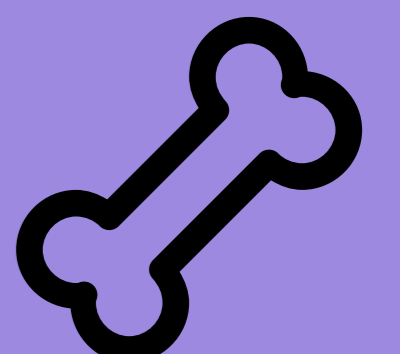


Gastrointestinal diseases affect people of any age and social condition, although the most vulnerable groups are children and the elderly (Godínez Oviedo, 2017)



Gastrointestinal diseases are associated with contaminated food and poor water quality, as well as poor hygiene practices.

Some undesirable side effects of antibiotics are the reduction of beneficial bacteria in the intestine, decreased ability to absorb calcium, causing problems and weakness in the bones.



References

- Goldin, B. (1998). Health benefits of probiotics. *British Journal of Nutrition*, 80 (S2), S203-S207. doi: 10.1017 / S0007114500006036
- Guarner, F, F. G., & Malagelada, J. R. M. (2003, February 15). The bacterial flora of the digestive tract | *Gastroenterology and Hepatology*. Retrieved November 30, 2019, from <https://www.elsevier.es/es-revista-gastroenterologia-hepatologia-14-articulo-la-flora-bacteriana-del-tracto-13043240>
- Hernández, Cortez, C., Aguilera, A. M. et. to the. Situation of Gastrointestinal Diseases in Mexico, January 2011, accessed 09/19/2019, https://www.researchgate.net/profile/Guadalupe_Aguilera2/publication/286612462_Gastrointestinal_diseases_situation_in_Mexico/links/5bdf1fe5299bf1124fbb7327/Gastrointestinaldiseation-.pdf