



Acidity and Intestinal Bacteria

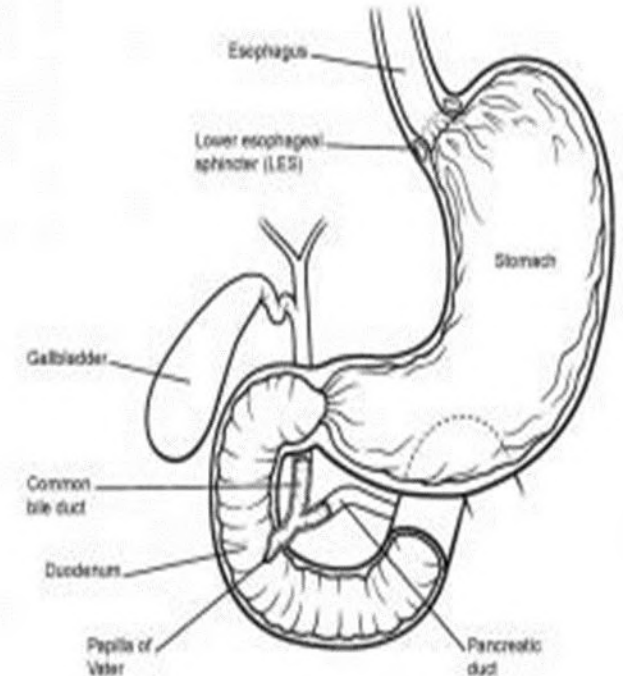
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Introduction

- The acidity of the stomach and the mechanical action are supposed to destroy all bacteria ingested with food or drink (Rotimi et al., 1990; Wright and Lenard, 2011)
- However the incidence of gastro infection is on the increase



Source: WebMD

Objectives

- This review focuses on factors that predispose the intestine to colonization with pathogenic bacteria.
- How the organism escape the bactericidal action of the stomach and other activities to get to the intestine where they establish infection.

Methodology

- Source of articles: Search engines such as Google (Google Scholar, Google books)
- Encyclopedia such as Wikipedia
- Journals: Journal of Medical Microbiology, African Journal of Medicine, etc.
- Textbooks: The Human Microbiota
- Keywords: intestine, pH etc.

Experimental Setting

- Several literatures were reviewed spanning from 1990 till date.
- Inclusion criteria
- Exclusion criteria

Results and Discussion

- Several studies have established in-vitro the bactericidal activity of gastric juice and hydrochloric acid especially against intestinal pathogens.
- *Lactobacillus plantarum* is known to survive acid pH by using FOF1-ATPase and sodium proton pumps to regulate and maintain intracellular pH (Kleerebezem *et al.*, 2002).
- *Helicobacter pylori* secretes urease in large amounts that break down urea found in the stomach.

Results and Discussion

- *H. pylori* burrows into the mucous membrane of the stomach linings by flagella activity and then secretes large amount of urease which converts urea to carbon dioxide and ammonia (Moblely *et al.*, 2001).
- The buffering activity of ammonia neutralizes the acidic pH around *H. pylori*.
- Enteric pathogens such as *Salmonella* and *Shigella* are sensitive to low pH (2-3) in-vitro, however, their passage through the stomach is associated with the type of food ingested and intestinal motility due to diarrhoea and other bowel disorders (Rotimi *et al.*, 1990).

Conclusions & Recommendations

- Though gastric acidity is bactericidal, a few other factors including environment, host and parasite physiology combine to determine the fate of any ingested bacteria in the GIT.
- Beneficial organisms can survive in the stomach because they are acid-tolerant unlike most pathogenic bacteria that show sensitivity to bactericidal effect of hydrochloric acid.

References

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- Wright, J. & Lenard, L. (2001) Why Stomach Acid is Good for You: Natural Relief from Heartburn, Indigestion, Reflux, and GERD. Lanham, Maryland: The Rowman & Littlefield Publishing Group.

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