International Journal of
Clinical & Medical Imaging

ISSN : 2376-0249
Volume 2 • Issue 12• 1000399
December, 2015
http://dx.doi.org/10.4172/2376-0249.1000399

PPT Presentation

Helicobacter pylori Infection in Children: A New Focus

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Background

Helicobacter pylori (*H. pylori*) infection places a heavy burden on medical and economic resources in worldwide. Standard diagnosis requires the presence of established *H. pylori* gastric disease. Thus, rapid and convenient identification and treatment of children at risk for developing infection is not possible. This slides show the evidence of *H. pylori* antigen in the mouth can be used to identify people at risk for disease, Special for children.

Family Aggregation

The aspect of children are salient features and familial aggregation that are particularity of *H. pylori* infection of childhood. In children infected with *H. pylori*, the main source of infection is connected with family members and caregivers, especially in close contact with the mother and children, through the mouth - mouth, dung - oral transmission.

H. Pylori infection rate of Children

Children are most susceptible to infection by *H. pylori*. According epidemiologic Meta analysis , the rate of infection estimate approximately 39.55% in children aged 1~5 group, but 43.90% at same age group in high prevention of stomach cancer territory.

Symptomatic aspects

H. pylori infection usually associated with indigestion, chronic diarrhea, frequent recurrent abdominal pain as well as many extragastric disease, such as deficiency anemia, iron-deficiency anemia, slow developing, chronic Urtica Cannabina

Oral *H. pylori* infection

Oral infection of *H. pylori* associated with periodontitis, caries and ozostomia. Oral cavity is second location of *H. pylori* infection that is major source of stomach infection and key fact of failure eradication.

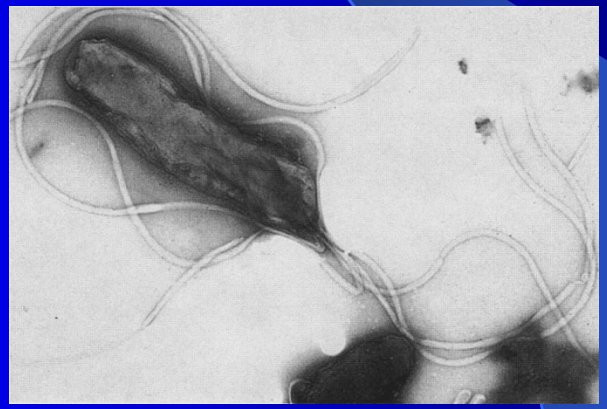
Diagnosis of *H. pylori* in Children

Endoscopy examination to diagnosis is not suitable for children.

BUT C^{13} is most common technology use for diagnosis in children, however limited the capacity of age below 6, there are false negative results may occur.

Principle of *H. pylori* Saliva test (HPS)

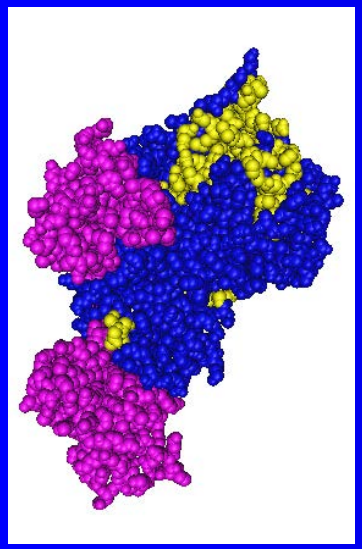
H. pylori urease antigen was specifically detected in saliva using a lateral flow, immuno-chromatographic test. The principle of this test is similar to UBT C^{13} in detecting urease released by *H. pylori*. The test employed monoclonal antibodies which were developed against semi-purified urease protein. HPS is suitable methold for children.

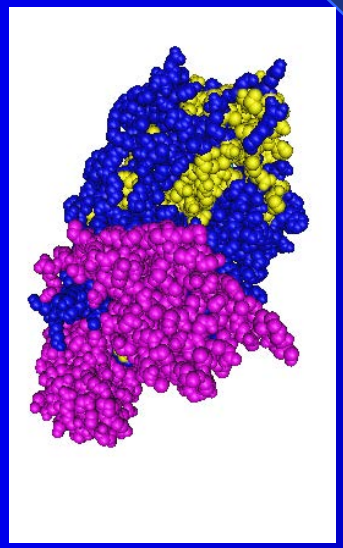


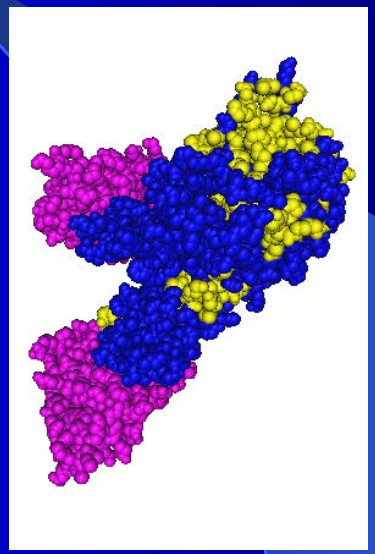
HPS specificity

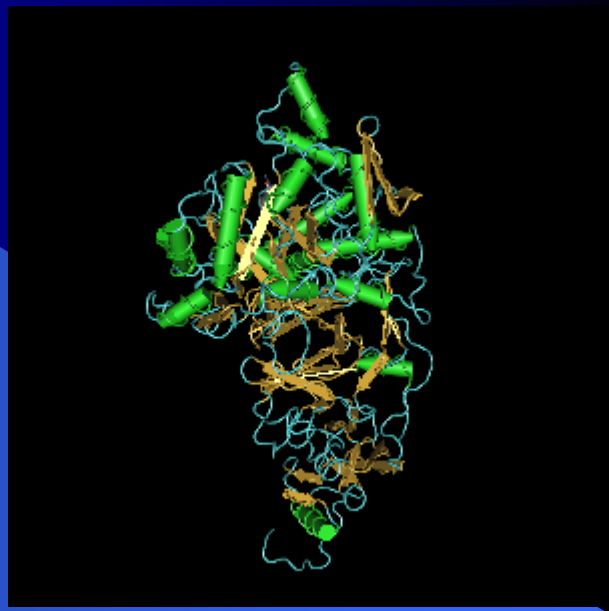
An important feature of *H. pylori* is that it can be divided into non-toxigenic and toxigenic strains that produce a vacuolating toxin (VacA). We use H. pylori, which carry virulence factor **CagA** (cytotoxin-associated gene A) and VacA that markers released pylori urease. Then we made antibodies from VacA and CagA.

HPS can specifically detecting *H. pylori* carry VacA and CagA

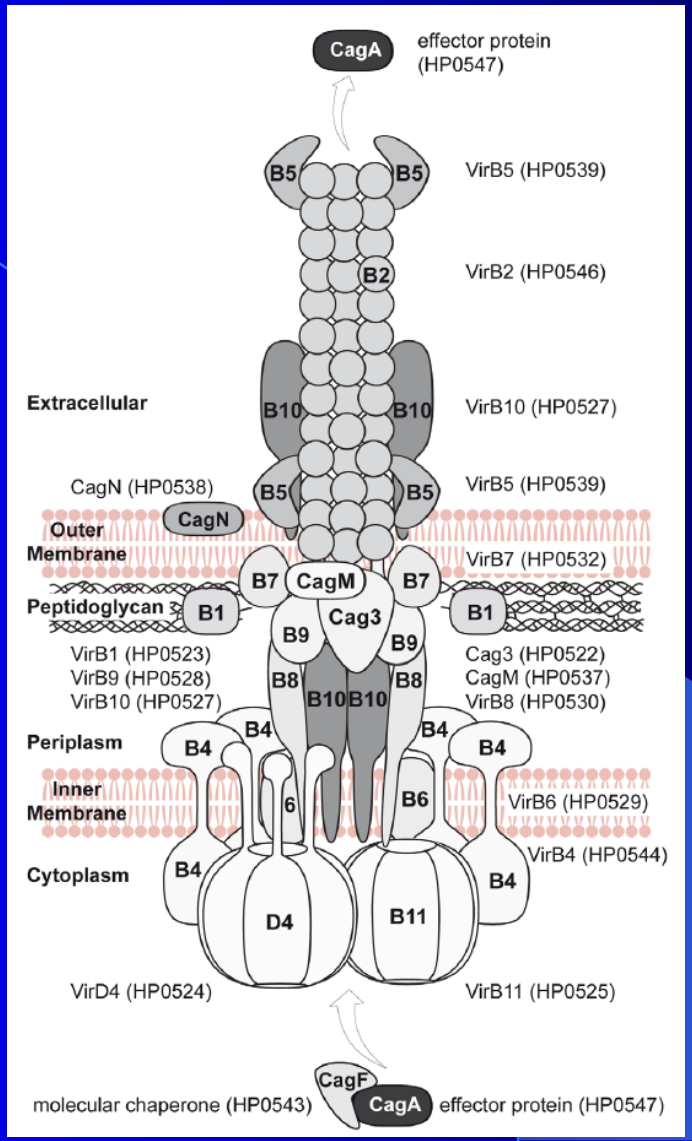




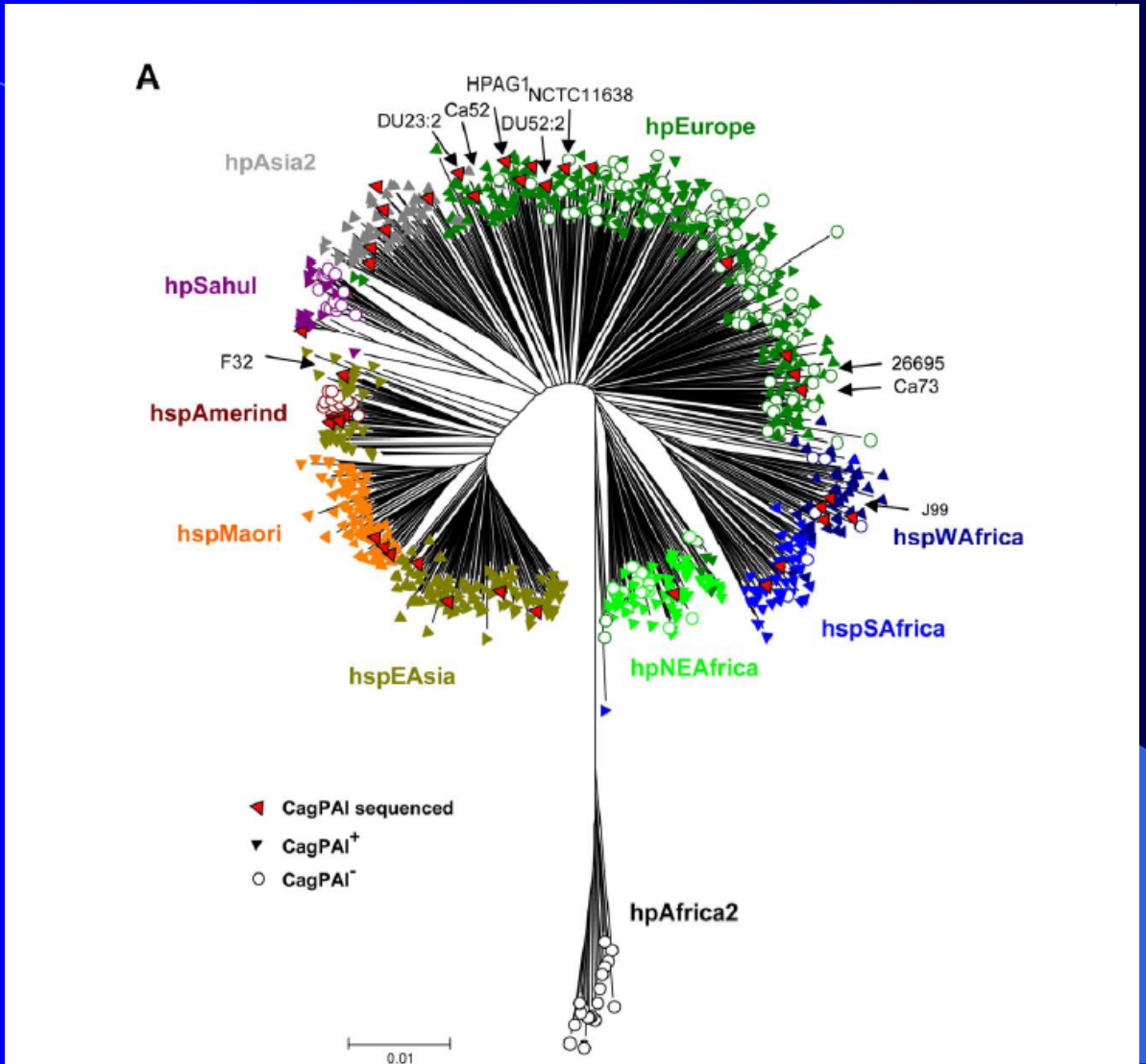




Cytotoxic pathogenicity island (CagA) and pin structure which results stomach cancel



CagA exists about 60,000 years ago in the human body, In western countries pylori (Hp Europe) containing 60% CagA, but Asian pylori how many carry CagA nobody detail reported. However, branch is not much remaining studies. Each branch fanned size represents the number of its subtypes, which represents the length of the number of its Priorities variation. Hp Europe, the most subtypes Priorities Hp Africa2 maximum variation.



Cross reaction

Here are very common bacteria in oral cavity produce Urease listed as following; Proteus Cirabilis; Citrobacter Freundii; Klebsiella; pneumoniae; Enterobacter cloacae ;Staphylococcus aureus; Actinomyces;Naeslundii,Proteus species

Or following molecular similar as Urease; Campylobacter lari; Deinococcus radiodurans R1;Bradyrhizobium sp. BTAi1

We run HPS cross reaction with above items show no cross reaction.

HPS test kit like a thermometer

After HPS contacting saliva, T and C both lines show purple color that indicating a positive results (patient may have *H. pylori* infection in stomach or in oral cavity). Only C line with purple indicating a negative results (patient may not have *H. pylori* infection)

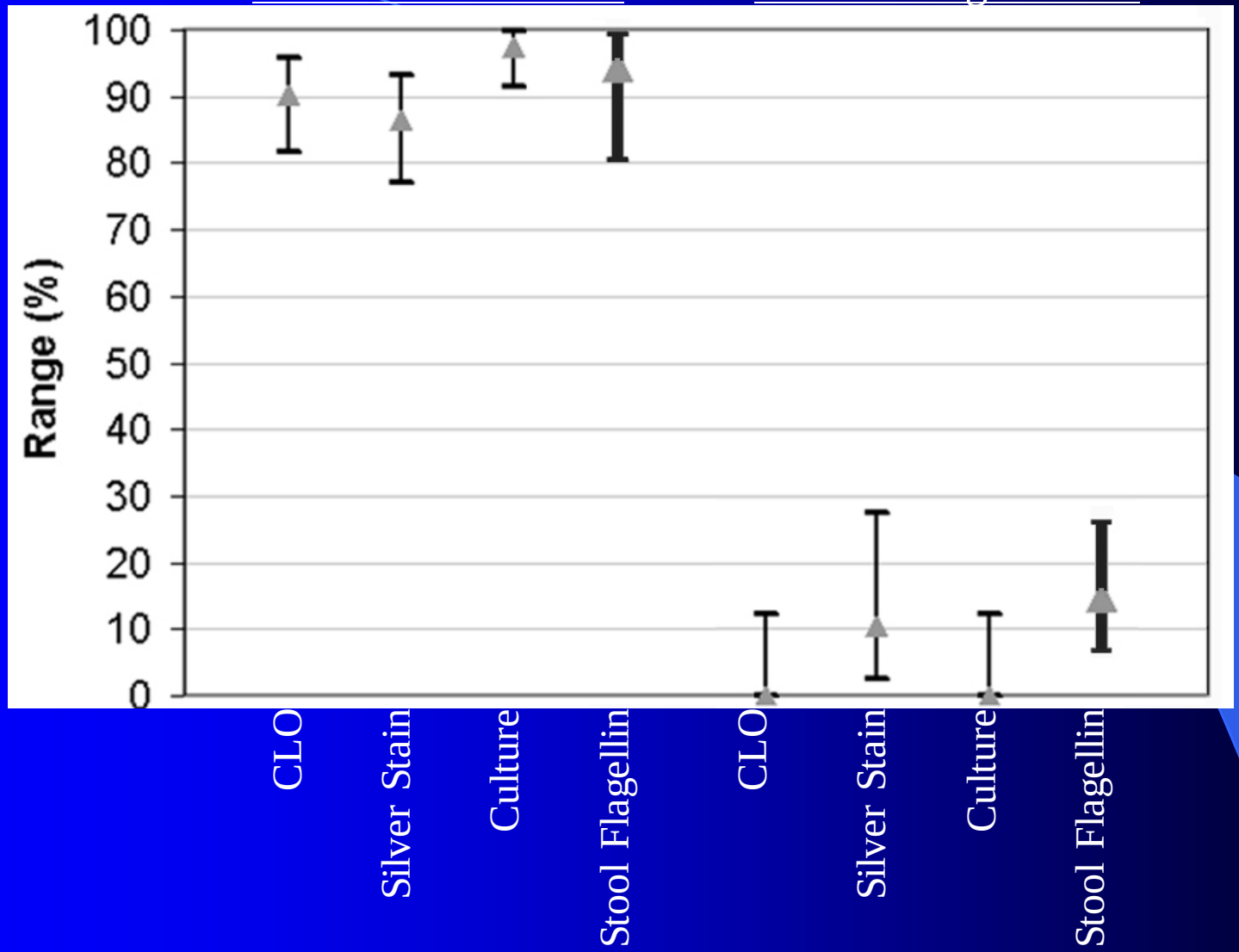


Figure 1. 95% Confidence Intervals for gastric and stool tests.

Comparison studies on HPS with UBT C ^{13}

- UBT+ mean positive rates (triangles): CLO (Rapid urease test of stomach specimen) = 90·1%; silver stain = 86·4%; culture = 97·5%; stool = 94·1%.

- UBT– mean positive rates (triangles): CLO = 0·0%; silver stain = 10·3%; culture = 0·0%; stool = 14·0%.

Normalized data indicated that HPS test was strong indicators of the presence of *H. pylori* antigen in the mouth

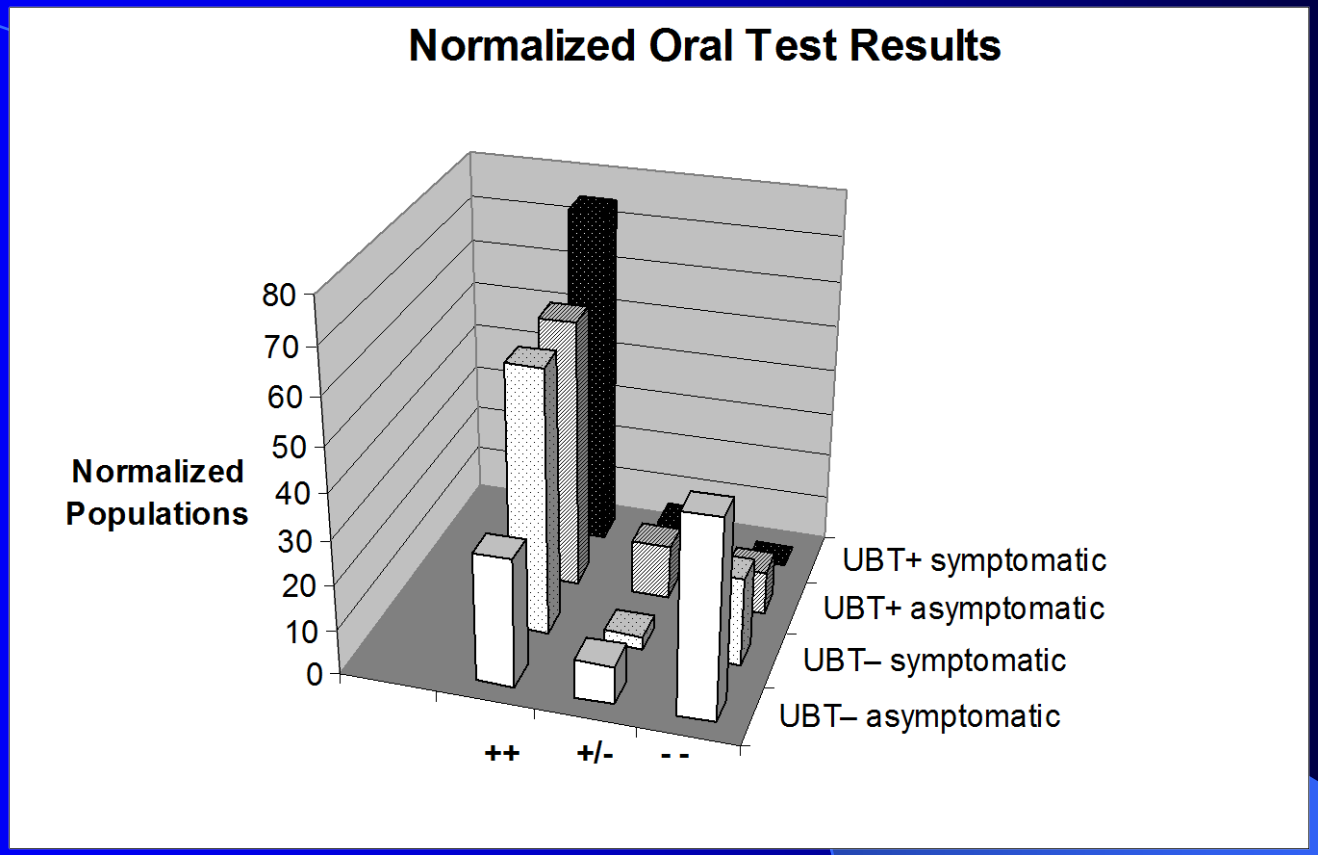


Figure 2. Normalized oral test results for individual people.

Advantages of HPS test

1, No surgery procedures such as *Endoscopy*

2, No equipment requirement such as UBT C^{13} or C^{14}

3, No radiation material involving like C^{14} which are not suitable for pregnant women and children.

4, No breath capacity issue like children run UBT C^{13} test

5, Low costs

6, Can use as Home Test Kits

7, High accuracy

8, HPS can detect oral *H. pylori* infection

Treatment on Oral H. pylori infection

There are reports that indicate drug eradication on stomach *H. pylori with no effect on oral H. pylori . In the food industry* e-polylysine (L) and the Glycerol Monolaurate (GM) are used in preserving meat products. The L is typically produced as a homo-polypeptide of approximately 25–30 L-lysine residues. The epsilon (e) refers to the linkage of the lysine molecules. In contrast to a normal peptide bond that is linked by an alphacarbon group, the lysine amino acids are molecularly linked by the epsilon amino group and the carboxyl group. L belongs to the group of cationic polymers. In water, L contains a positively charged hydrophilic amino group. It is adsorbed electrostatically to the cell surface of the bacteria, followed by a stripping of the outer membrane. This eventually leads to the abnormal distribution of the cytoplasm, causing damage to the *H. pylori cell. GM is the mono-ester formed from glycerol and* lauric acid. *H. pylori is extremely sensitive to GM, however* there are no reports of L or GM killing *H. pylori in vivo. Since* both have had a safe record in the food industry, we introduced them into the oral cavity to see whether they could eliminate *H. pylori.*