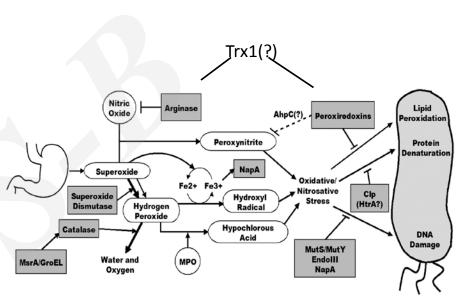
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Expression of three essential antioxidants of *Helicobacter pylori* in clinical isolates

Key words: Antioxidant, Gastric cancer, Helicobacter pylori, Oxidative stress

- Helicobacter pylori is a microaerophilic bacterium and a gastric pathogen that colonizes about 50% of the world's population. H. pylori infection causes chronic inflammation and significantly increases the risk of developing duodenal and gastric ulcer diseases and gastric cancer. Chronic H. pylori infection is now considered to be the strongest risk factor for gastric cancer (Wroblewski et al., 2010). Recent reports have suggested that exacerbated DNA damage of gastric cells results from inflammation-related oxidative stress induced by reactive oxygen species (ROS) in vivo (Coussens and Werb, 2002).
- The antioxidant systems in *H. pylori* appear to be essential for its survival in the host and are expected to be relevant to bacterial-associated, and especially inflammation-associated, infectious diseases. Studies have indicated that these systems have many components.



In this study, we investigated *Trx1*, *RocF*, and *AhpC* expression in *H. pylori* strains isolated from tissues exhibiting gastritis, peptic ulcer, and gastric cancer. The relationships among the expression of these antioxidants in *H. pylori* were also assessed using Pearson's correlation test.

Gastric mucosa tissues infected by H. pylori



Isolating of *H. pylori* bacterial strains



RNA isolation of *H. pylori*



Reverse transcription and realtime polymerase chain reaction for Trx1/AhpC/RocF



Statistical analysis
(ANOVA test and Pearson's
correlation test

- It was found that *Trx1* expression of *H. pylori* in clinical gastric cancer and peptic ulcer tissues was higher than that in gastritis tissues. RocF expression of *H. pylori* in gastric cancer tissues was higher than that in tissues exhibiting peptic ulcer and gastritis. The mRNA expression levels of AhpC in H. pylori isolated from the gastritis, peptic ulcer, and gastric cancer samples showed no significant differences Pearson's correlation test showed that *Trx1* and *RocF* expression had a positive, linear correlation. Trx1 expression had a low positive correlation with AhpC expression (r=0.178), but did not present a linear trend (P>0.05), However, there was no significant correlation (r=0.009; P>0.05) between the expression of *RocF* and *AhpC*.
- This study lends support to the supposition that the antioxidant enzymes in *H. pylori* may be related to the development of gastric cancer from *H. pylori* infection.