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Pleiotropic Effects of Proton Pump Inhibitors
Guest Editor: Yuji Naito

Anti-Inflammatory and Anti-Oxidative Properties of Proton Pump Inhibitors

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Gastric acid-dependent diseases, i.e. gastroesophageal reflux disease and peptic ulcers, are the leading causes of heart burn, epigastralgia, and dyspeptic symptoms. Gastric acid suppressing intervention have demonstrated a marked reduction in subjective symptoms as well as ulcer healing. Proton pump inhibitors (PPIs) have been widely used for the treatment of these diseases and *Helicobacter pylori* eradication therapy due to their strong anti-secretory effects by inhibiting H^+K^+-ATPase of parietal cells [*1*–*3*]. Besides the acid-suppressing effects, PPIs, especially lansoprazole, have been shown to modulate the inflammatory status, reduce oxidative stress, and improve mucosal injury in the small intestine [*4*, *5*]. *In vitro* studies have also demonstrated that PPIs inhibit the increased expression of vascular adhesion molecules, the activation of neutrophils, and the production of pro-inflammatory cytokines [*6*, *7*]. Recent our study using a DNA microarray clearly indicates that lansoprazole induces several genes including phase II detoxifyingenzymes (NADH-ubiquinone oxidoreductase, glutathione S-transferase) and antioxidant stress proteins (heme oxygenase 1, thioredoxin reductase, superoxide dismutase) in gastric epithelial cells. All data are available on the internet (http://www2.kpu-m.ac.jp/%7Efirstmed/GeneChip.html). These data provide additional perspectives for a possible but yet unexplored use of PPIs, especially lansoprazole, in cytoprotection and vasoprotection. In this serial review, we invite several outstanding researchers in this field to summarize their work, to review their peers' activity, and to encourage us by their opinions. I thank all the anonymous reviewers of these articles for their insightful comments.

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