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Epigallocatechin gallate accelerates healing of indomethacin-induced stomach ulcers in mice

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Abstract:
Management of the gastric toxicity of non-steroidal anti-inflammatory drugs (NSAIDs) remains a crucial problem because the commercially available drugs have side effects and are often expensive. Therefore, we examined the potential of the green tea-derived polyphenol epigallocatechin gallate (EGCG) to treat indomethacin-induced stomach ulcers in mice. Administration of indomethacin (18 mg/kg, *po*) to mice induced ulceration in the glandular portion of the gastric mucosa, accompanied by increased lipid peroxidation (LPO) and protein oxidation and reductions in thiol defense, mucin, cyclooxygenase (COX) expression and prostaglandin (PG) synthesis in the gastric tissues. Daily oral administration of EGCG (2 mg/kg) or omeprazole (3 mg/kg) for 3 days produced similar (~72–75%, $p < 0.001$) beneficial effects on the acute gastric ulceration. Treatment with the test samples partially reversed all the adverse oxidative effects of indomethacin. In addition, EGCG, but not omeprazole, enhanced expression of the COX isoforms and PG synthesis. The results suggest that the non-toxic and inexpensive tea polyphenol EGCG may be an excellent candidate for further evaluation as a potent anti-ulcer drug.

Key words:
antioxidant, COX, gastric ulcer, mucin, prostaglandin