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Preventive effect of agaro-oligosaccharides on non-steroidal anti-inflammatory drug-induced small intestinal injury in mice

（非ステロイド性抗炎症剤によって誘導される小腸潰瘍におけるアガロオリゴ糖の予防効果）

Background and Aim: Non-steroidal anti-inflammatory drugs (NSAIDs), which are commonly used in clinical medicine, cause erosion, ulcers, and bleeding in the gastrointestinal tract. No effective agent for the prevention and treatment of small intestinal injury by NSAIDs has been established. This study investigates the effects of agarooligosaccharides (AGOs) on NSAID-induced small intestinal injury in mice.
Methods: Mice were treated with indomethacin, an NSAID, to induce intestinal injury. The respective degrees of mucosal injury of mice that received AGO and control mice were compared. Heme oxygenase-1 (HO-1) expression using quantitative real-time polymerase chain reaction (qRT-PCR), Western blotting, and immunohistochemistry were measured. The expression of keratinocyte chemoattractant (KC) was measured using qRT-PCR and enzyme-linked immunosorbent assay.
Results: AGO administration induced HO-1 expression in mouse small intestinal mucosa. Induction was observed mainly in F4/80 positive macrophages. The increased ulcers score, myeloperoxidase activity, and KC expression by indomethacin were inhibited by AGO administration. Conversely, HO inhibitor cancelled AGO-mediated prevention of intestinal injury. In mouse peritoneal macrophages, AGOs enhanced HO-1 expression and suppressed lipopolysaccharide-induced KC expression. Furthermore, AGOs enhanced the expressions of alternatively activated macrophage markers arginase-1, mannose receptor-1, and chitinase 3-like 3.
Conclusions: Results suggest that oral administration of AGOs prevents NSAID-induce intestinal injury.