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GASTRO PROTECTIVE EFFECTS OF *USNEA LONGISSIMA* METABOLITES ON PROBIOTIC *LACTOBACILLUS CASEI*

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ABSTRACT: Protective effect of the probiotic combination of usnic acid and *Lactobacillus casei* in experimentally induced ulcer in rats was investigated. Rats inward usnic acid (100 mg/kg), *L. casei* (10^{-8} con.), usnic acid (100 mg/kg) + *L. casei* (10^{-8} con.), and omeprazole (30 mg/kg) twice daily for 5 days for prevention against aspirin (ASP), ethanol (EtOH), cold restraint stress (CRS) and pylorus ligation-induced ulcer (PL). The results of the present study showed the first time that the usnic acid (100 mg/kg) + *L. casei* (10^{-8} con.) as probiotic combination significantly inhibited the ulcer index in ASP, EtOH, CRS and PL to 3.4 ± 0.12, 6.3 ± 1.8, 3.4 ± 0.8 and 4.3 ± 0.9 ($p<0.001$) respectively, as compared to control group (19.2 ± 1.6, 22.5 ± 6.3, 24.2 ± 3.2, 14.2 ± 2.7). Besides usnic acid (100 mg/kg) + *L. casei* (10^{-8} con.) offered protection (72%, $p<0.001$) against ethanol-induced depletion of gastric wall mucus. The usnic acid (100 mg/kg) + *L. casei* (10^{-8} con.) showed significant inhibition of lipid peroxidation and superoxide dismutase (5.46 ± 1.30, 120.6 ± 3.2) ($p<0.01$, $p<0.001$) respectively and enhance activity of catalase (32.2 ± 1.3, $p<0.001$) to healthy group range (34.2 ± 2.7, $p<0.001$). However, it elevated the decreased level of PGE_2 from 0.62 ± 0.12 ($p<0.05$) to 2.03 ± 0.51 ($p<0.001$) as compared to omeprazole. These results suggest that probiotic combination could attenuate the severity of gastric ulcer and prevent the toxicity level of usnic acid in the liver.

INTRODUCTION: Abnormal secretion of gastric acid and pepsin are the main reason for gastric ulcer disease. Nowadays, critical issue for gastric ulcer disease is gastric hyper secretion-linked with gastrinoma in Zollinger-Ellison syndrome, raise in parietal-cell mass, antral G-cell hyperplasia, and a physiological disproportion between the antagonistic gastric hormones gastrin and somatostatin.

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It is known that cholinergic hypersensitivity and parasympathetic dominance both are related to pepsin [1]. Besides having anti-inflammatory and analgesic activity, NSAID especially aspires; significantly increase the risk of gastrointestinal infection in Asian countries. Individually those are related to gastric injury: Ulcer complications especially bleeding. NSAIDs cause an injurious effect by the inhibition of COX1 and its function in standard mucosal protection mechanisms, and also by the inhibition of thromboxane A_2, which accord platelet function and cause in gastrointestinal bleeding [2-5] but simultaneous low-doses of aspirin reduces the effect [2]. However, the interaction between microbial flora and pathogenic organisms has been reported [6].