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News & Comments

The Mechanism of *Saikosaponins* (SSs) in the Treatment of Gastric Ulcers

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An enormous number of people around the world suffer from gastric ulcers. The prevalence of stomach ulcers is around 10% of the global population. Reduced stomach acid production and increased gastric mucosal protection are now the two main prevention methods suggested for peptic ulcer disease. Existing treatment options include antacids, H2-receptor antagonists, and proton pump inhibitors. Numerous experimental and clinical researches have shown that herbal remedies for stomach ulcers have fewer negative effects and can be effective treatments. The primary bioactive chemicals identified from Radix bupleuri are known as Saikosaponins (SSs), which have a characteristic oleanane-type structure. SSs have a broad range of pharmacological effects and are frequently used to treat a variety of illnesses, including fever, malaria, nephritis, and many others.

To provide better insights on SSs for clinical application and lay the groundwork for the logical clinical application of Qizhi weitong prescription, this study sought to identify the biochemical pathways related to the SSs efficacy and to improve understanding of the therapeutic mechanism of SSs.

From Merck Fluka, formic acid was obtained (Sigma, USA). The Milli-Q Ultrapure water system was used to purify the water (Millipore, France).

Tianjin Yongda Chemical Reagent Co., Ltd. offered more chemicals and reagents of analytical grade (Tianjin, China). The Liaoning Changsheng Biotechnology Co., Ltd. furnished the male Sprague-Dawley (SD) rats that were 7 weeks old and weighed 220-250 g. Radix Bupleuri was extracted twice for 2 hours each to create a water extract. All of the rats were given 12 hrs without food or water before the experiment. Rats were given a gastric ulcer using the previously described technique. Profinder (version B.06.00, Agilent Technologies, USA) was used to process the mass data, and the qualitative analysis tool mass hunter was used to create an extracted chromosome. All statistical analysis was done using the SPSS 19.0 program, one-way analysis of variance (ANOVA), and independent-sample t-test.

The number of chemicals retrieved from each group using the Mass Hunter Qualitative analysis software's molecular feature extraction function was as follows: Model group 3542, healthy control group 3516, SS medium-dosage group 3556, SS low dose group 3549, omeprazole group 3524, and ranitidine group 3533 are some of the groups studied. A heat map representing the findings of the hierarchical clustering study was created. The vital components of bupleurum that are frequently applied in medical settings are called SSs. More than 75 monomer SSs, including SSA, SSB, SSC, SSD,

SSM, SSN, SSP, and SST17, 18, have been isolated from Bupleurum. Of these, SSA, SSB2, SSC, and SSD are the primary active components. In humans, histamine has pleiotropic actions that affect the immunological, neuroendocrine, neurotransmitter, and gastric secretion systems. Histamine stimulates the H+-K+-ATPases in the parietal cells of the digestive tract, causing gastric acid to be secreted36. Linoleic acid also regulates gastric acid release, and its down-regulated expression can lessen acid secretion and avoid mucosal injury, presumably because the gastric mucosa produces more endogenous prostaglandins. One of the main benefits of SSs is that they can regulate several targets to cure stomach ulcers.

This study uses RT-PCR and metabonomic to demonstrate how SSs control sphingolipid metabolism and bile acid secretion to treat gastric ulcers. This study's findings provided the groundwork for the clinically sound use of SSs to treat gastric ulcers.

JOURNAL REFERENCE

Yang, X.X., S. Wang, T.J. Li, Y.K. Zhang, H.B. Wang, Y.R. Bao and X.S. Meng, 2022. Mechanism of saikosaponins from *Radix bupleuri* in the treatment of acetic acid-induced gastric ulcer in rats. Int. J. Pharmacol., 18: 972-982.

KEYWORDS

Radix bupleuri, gastric ulcer, metabolomics, sphingosine-1-phosphate, cholic acid