

Huang Lian Jie Du decoction attenuated colitis via suppressing macrophage CSF1R/SRC pathway and modulating gut microbiota

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Abstract:

Introduction: Ulcerative colitis, a subtype of chronic inflammatory bowel disease (IBD), is characterized by relapsing colonic inflammation and ulcers. Traditional Chinese herbal formulation Huang Lian Jie Du (HLJD) decoction is used clinically to treat diarrhea and colitis. However, the mechanism(s) associated with the effects of treatment remains unclear.

Materials and Methods: Chronic colitis in mice were induced by 1% dextran sulfate sodium (DSS) in drinking water continuously for 8 weeks, and HLJD decoction at the doses of 2 g/kg and 4 g/kg were administered orally to mice daily from the second week until experimental endpoint. Stool consistency scores, blood stool scores, and body weights were recorded weekly. Disease activity index (DAI) was determined before necropsy, where colon tissues were collected for biochemical analyses. In addition, the fecal microbiome of treated mice was characterized using 16S rRNA amplicon sequencing.

Results: HLJD decoction at doses of 2 g/kg and 4 g/kg relieved DSS-induced chronic colitis in mice by suppressing inflammation through compromised macrophage activity in colonic tissues associated with the CSF1R/SRC pathway. Furthermore, HLJD formula could modify the gut microbiota profile by decreasing the abundance of *Bacteroides*, *Odoribacter*, *Clostridium_sensu_stricto_1* and *Parasutterella*. In addition, close correlations between DAI, colon length, spleen weigh and gut microbiota were identified.

Conclusions: Our findings revealed that HLJD formula attenuated DSS-induced chronic colitis by reducing inflammation via CSF1R/SRC mediated macrophage infiltration, as well as modulating the gut microbiota profile.