

***Annickia Polycarpa* Extract Attenuates DSS-induced Colitis by Balancing Neutrophil Recruitment**

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Introduction: Inflammatory bowel diseases (IBD) are chronic inflammatory diseases of the gastrointestinal tract with an increasing incidence worldwide. IBD consists of Crohn's disease (CD) and ulcerative colitis (UC) and is characterized by intestinal epithelial barrier dysfunction, excessive neutrophil recruitment, and oxidative stress. Current treatment strategies involve anti-inflammatory drugs that often show adverse side effects thus warranting the need for safer alternatives. The chloroform fraction of *Annickia polycarpa* (APE) possesses potent antioxidant and anti-inflammatory activity. Thus, we hypothesized that APE could improve the outcome of murine colitis by ameliorating the chronic inflammatory response.

Methods: We induced colitis using dextran sulfate sodium (DSS) and gavaged mice with the chloroform fraction of *Annickia polycarpa* daily for 7 days. Survival and disease activity index (DAI) consisting of symptoms such as weight loss, diarrhea, and perianal bleeding was determined daily. Subsequently, colon tissues were recovered for histological analysis using hematoxylin-eosin. mRNA levels of inflammatory cytokines in the colon were determined by quantitative real-time PCR. Neutrophil levels in the colon tissue were determined after immunofluorescence staining with anti-mouse Gr-1 antibodies; and oxidative stress was analyzed using the dihydroethidium assay. Finally, using the Evans-blue-based permeability assay, we determined epithelial permeability in the colon.

Results: APE-treated mice had improved survival and significantly reduced DAI. DSS-induced colon tissue damage was ameliorated upon APE administration as manifested by reduced colon length shortening and edema formation, less leukocyte infiltration and preservation of colon crypts. Colon tissue expression of the proinflammatory cytokines TNF- α , IL-1 β , and IL-6 were attenuated upon APE administration. Also, we observed that fewer neutrophils infiltrated the lamina propria of the colon tissue in APE-treated mice resulting in reduced oxidative stress. Consequently, we observed reduced intestinal permeability in the colon of APE-treated mice.

Conclusion: In summary, daily administration of *Annickia polycarpa* reduces disease severity and improves survival during murine colitis by limiting neutrophil influx, inflammation, and oxidative stress in the colon. Thus, APE may serve as a therapeutic alternative to improve the management of IBD.