

Five aromatic components ameliorated trinitrobenzene sulphonic
acid-induced colitis in mice

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Inflammatory bowel diseases (IBD) are important gastrointestinal diseases by dysregulated mucosal cytokine imbalance leading to inflammation and mucosal damage, and to subsequent fibrosis. At present, all of the anti-inflammatory drugs, such as 5-aminosalicylic acid, and immunosuppression drugs, such as glucocorticoids, have been used for the treatment of IBD. However, these drugs often induce various side effects that limit their use. Many people add spice(s) in diet not only to increase appetite, but also promote health. Therefore, we investigated the therapeutic effects of 5 aromatic components (zingerone, vanillin, eugenol, anethole, and capsaicin) in mice with 2,4,6-trinitrobenzene sulphonic acid (TNBS)-induced colitis. Induction of colitis and treatment: TNBS in 0.1 ml of 50% ethanol was administered into the colon of a anesthetized mouse via a thin catheter attached to a syringe. Anethole is the most active component that improved both macro and microscopic colitis severity in a dose-dependent manner. Pathway analysis of anethole-regulated gene expression profiles showed that anethole significantly regulated IL6, TNF, TGF- β , cytokine, and cytokine-cytokine receptor interaction pathways. Immunohistochemical staining results indicated that anethole down-regulated the TNF α , TGF- β I, and IL6 protein levels in the colon. Network analysis showed that NF- κ B and IL-1 β were key molecules involved in the expression of anethole-affected genes. Ex vivo imaging and immunohistochemical staining further verified that anethole suppressed TNBS-induced NF- κ B activation and IL-1 β protein level in the colon.