Investigating a mechanism of action for Traditional Chinese Medicine: a potential new adjunctive treatment for intestinal disease

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Background

Inflammatory bowel disease (IBD) is a serious idiopathic and, so-far, incurable condition affecting approximately 1 in 8000 individuals in Australia. It comprises two variants, ulcerative colitis and Crohn's disease. The histopathological features of Crohn's disease are similar to Johne's disease, a debilitating condition that affects livestock. On the other hand, intestinal mucositis (IM), which often manifests in cancer patients undergoing chemotherapy, affects primarily the small intestine. Current therapies for IBD and IM attempt to reduce inflammation and injury to the bowel but these are often ineffective.

Aims and Significance

Traditional Chinese Medicine (TCM), is used widely to treat a range of human health disorders, although the scientific basis for these applications has been limited. There have been relatively few rigorously-conducted scientific studies to underpin its use health-related purposes. In a current Honours project we are investigating one TCM product for its potential to protecting the intestine from injury. The current study will seek to define a potential mechanism of action for this TCM formulation by determining its effects on intestinal mucins and cell kinetics of the intestinal enterocytes (cells that line the intestine).

Techniques to be used

TCM treated gastrointestinal tissues collected from rats with experimentally-induced IBD and IM will be subjected to mucin staining and subsequent localisation and quantification. Different types of mucin will be determined and correlated with histological parameters (villus height/crypt depth) and enterocyte kinetics (proliferation/apoptosis) using immunohistochemistry. Some small animal handling will be involved.

Reference

KY Cheah, GS Howarth, RN Butler, C Payne, KA Lymn, R Yazbeck, TH Wright, EJ Whitford and SEP Bastian. An extract from grape seed improves parameters of small intestinal mucositis in rats with mucositis induced by 5-Fluorouracil. Cancer Biol Ther.8(4):382-390 (2009).