Caffeine, Curcumin: New Drug Discovery for Hepato Colitis

Authors: Holly Montgomery Sandra Bennett Robert Watson James Fields Michael Smith

Published Date: 03-16-2018

University of Alaska Southeast

School of Biology

A combination of published studies across Europe and Japan has found that leukopenia induces hepato colitis in mice with a genetic deficiency in the gene LDH (retinoic acid dehydrogenase). Hyphae can lead to abdominal pain, diarrhoea, and liver injury. Yet it is not fully understood why leukopenia leads to colitis.

This is a potential cause, involving one of the molecular targets for the disease, when leukopenia induces hepato colitis in mice with LDH deficiency. Decongestants and complementary therapies can reduce the risk of hepato colitis in humans with LDH deficiency, but they can do little to inhibit the inflammation caused by leukopenia. The new research shows that both caffeine and curcumin are effective in reducing leukopenia.

Coffee and curcumin have been associated with several beneficial effects in our health, including reduced inflammatory responses, and these results may provide further evidence for the benefits of caffeine and curcumin on hepato colitis. Together, the main antidiabetic compounds are part of a broad class of anti-inflammatory molecules known as "Growth-promoting compounds" (GPRs). Some of the most commonly studied GPRs include gamma-glutamyltransferase, calcineurin, and catecholamines (NBG, which include the synthetic glucagon-like peptide-1 or GLP-1). Of particular note is the fact that, contrary to the theory of growth hormone suppression, the pro-inflammatory effects of caffeine and curcumin were noted by multiple reviewers. When combined with saturated fats, or after a moderate dose of oral sibutramine (a pro-inflammatory appetite suppressant), these anti-inflammatory properties were noted to have anti-viral effects in our rodent models.

Finding that caffeine and curcumin can reduce leukopenia was therefore a surprise. It suggests that a number of factors may be involved in the active prevention of liver damage by anti-inflammatory agents, for which many of the research findings which help define the benefits of anti-inflammatory therapies also point. Indeed, a recent review published in the European Journal of Clinical Nutrition found that statins (commonly prescribed to lower cholesterol) have the potential to aid the development of leukopenia in mice bred to have a reduced LDH gene. This study also suggests that a future drug could be developed which inhibits leukopenia by using compounds already familiar to humans. For example, an anti-inflammatory drug which has the anti-inflammatory properties of statins could prevent leukopenia in our mice by blocking LDH synthesis. While the concept of anti-inflammatory drugs in the treatment of disease, including hepatitis, is well documented, how we can add to the benefits of anti-inflammatory drugs is an important avenue which is yet to be explored. The new research linking the effects of caffeine and curcumin on hepato colitis represents a step in this direction.

Article:

Kuno Sakata, Yukichi Fuguise, Jun-ichi Okano, Hyo Abe, Akira Terada, Yoshikazu Minagawa, Hengqi Yang, Takeshi Kanto, Kihui Kohuchi, Jiro Mano, Ryo Atake, Takako Nagahara, Yasuo Aeda, Rei Nagashima, Yuichi Ueda, Toshihide Satish, Kagari Urich

Hepato_carcinogenesis and leukopenia -benefit of caffeine and curcumin. J Am Coll Pathol. doi:10.1161/JATA-12-08-0221P

A Close Up Of A Fire Hydrant Near A Tree