Evaluation of antinociceptive, antipyretic and anti-inflammatory effects of *Euclea divinorum*, *Solanum incanum* and *Craterostigma plantagenium* in animal models

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Abstract

Inflammation, pain and fever are key signs and or symptoms associated with various pathological processes in the body. All over the world people continue to experience chronic pain and inflammation (particularly in developing countries) because of the exorbitant prices of the synthetic conventional drugs that alleviate these conditions. To date, pain has captured the attention of researchers and is considered a major health problem, while chronic inflammation is associated with cancer development. In East Africa, there are several herbs with therapeutic potential for pain, inflammatory process and/or fever. For instance, *Euclea divinorum, Solanum incanum* and *Craterostigma plantagenium* are some of the known herbs. Nevertheless, little or no scientific study has been conducted to validate these claims. This proposed work therefore aims at evaluating the antinociceptive, anti-inflammatory and antipyretic effects of purified extracts of these plants using animal models. This study underscores the significance of developing a potent, safer and cheaper alternative drug(s) for pain, fever and inflammation management. The antinociceptive assay will be carried out using acetic acid writhing method, formalin, hot plate and tail flick tests on mice. The anti-inflammatory study will involve measurement of change in; paw edema volume, COX-2 activity, Interleukin-1ß (IL-1β), tumor necrotic factor-α (TNF-α) and white blood cell migration assays. In the antipyretic assay, fever will be induced in Sprague Dawley rats using lipopolysaccharide from *E. coli.* Rectal (core) temperature measurements will be taken using a thermocouple with the thermister probe inserted in the rectum. In this study international standards of ethical principles for animal research will be followed strictly. Data for each set of experiment will be analysed using Windows Kwikstat sda 7.0.3 and Excel statistical software. One way ANOVA with *Scheffé* post *hoc* test will be used to compare the test and control group values. A value of $p < 0.05$ will be considered significant.