# Antidiarrhoeal effects of freeze-dried extracts of *Justicia betonica* L. in Sprague dawley rats.

**Emmanuel Wandera, Charles G Githinji, Anne W Muriithi and Frederick O Bukachi**

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**Abstract**

Diarrhea remains a major public health concern, particularly in developing countries, where it significantly contributes to morbidity and mortality. While oral rehydration salts (ORS) and modern antidiarrheal drugs are commonly used, they often present limitations such as side effects and suboptimal efficacy. Medicinal plants have been traditionally used to manage diarrhea in developing countries and they offer potential alternatives. This study aimed to investigate the antidiarrheal effects of freeze-dried extracts of *Justicia betonica* Linn. Rat *in vivo* model of diarrhea was used where diarrhea was induced with castor oil, and the effects of *Justicia betonica* extracts were evaluated at doses of 200 mg/kg, 400 mg/kg, and 800 mg/kg. Additionally, an *ex vivo* model tested the extract's impact on the intrinsic contractions of isolated rabbit jejunal segments. Results showed that *Justicia betonica* Linn extract significantly reduced both total and wet stool counts in the rat model. The effect of the highest dose (800 mg/kg) was similar to the standard drug, loperamide ($p<0.05$). In the *ex vivo* study, the extract reduced the frequency and amplitude of jejunal contractions in a dose-dependent manner, similarly to atropine ($p<0.05$). The results suggest that *Justicia betonica* possess antidiarrheal effects. Reduced jejunal contractions indicated that the extract's mechanism of action is by decreasing intestinal peristalsis. The study validates the traditional use of *Justicia betonica* in treating diarrhea and highlights its potential as a source of new antidiarrheal agents.

**Keywords:** *Justicia betonica*, antidiarrheal, medicinal plants, castor, intestinal motility, Rats