

Development and evaluation of some novel polyherbal anti-inflammatory and analgesic formulations of some Indian spices

Sachin Jadhav, Kailash Biyani

Department of Pharmacology, Anuradha College of Pharmacy, Chikhali, Buldhana, Maharashtra, India

Correspondence:

Sachin Jadhav,
Anuradha College of Pharmacy, Chikhali, Buldhana, Maharashtra, India.
E-mail: sachix97@rediffmail.com

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ABSTRACT

Background: Inflammation is linked with a broad range of infectious and non-infectious diseases; hence, also considered on root of the all diseases. The crucial role of inflammatory processes makes possible evaluation research focusing on the treatment of inflammation. **Aim:** The present study was aimed to develop and evaluate some novel polyherbal anti-inflammatory and analgesic formulations of some Indian spices. **Materials and Methods:** Rhizome of *Zingiber officinale*, *C. longa*, bulb of *A. sativum*, and fruit of *C. annuum* were collected locally. Animals were procured from the institute and the protocol adhered to the IAEC guidelines. Herbal drugs were extracted using soxhlet apparatus. gel, cream, and ointment formulations were prepared using different concentrations of the herbal compounds. The formulations were then physically evaluated for pH, viscosity, spreadability, and stability. Acute toxicity studies were also performed in the animals. Anti-inflammatory activity was evaluated using paw edema method, cotton-pellet-induced granuloma method, and ultraviolet erythema induction. Tail flick, hot plate, and tail immersion methods were used for evaluation of analgesic activity. Diclofenac sodium was used as standard drug. Data were presented as mean \pm standard deviation wherever applicable. For continuous variables, Student's t-test was used to differentiate mean difference. For comparison between more than 2 groups, one-way analysis of variance was used followed by post hoc analysis. $P < 0.05$ was considered significant. Statistical analysis was performed using SPSS trial version 21. **Results:** In acute toxicity studies, the animals could tolerate a dose >2000 mg/kg body weight with no mortality. Our study results showed that gel, cream, and ointment formulations in all polyherbal combinations significantly inhibited paw edema, cotton pellet-induced granuloma, and formation of erythema. However, the activities were highest for gel formulation. These results supported that the polyherbal formulations significantly exhibit anti-inflammatory and analgesic activities. **Conclusion:** Gel formulations among prepared topical formulations showed the highest activity and also exhibited nonstaining, good spreadability, and patient compliance. Topical formulations containing spices can be used in chronic inflammatory and pain conditions and devoid of side effects.

Keywords: Analgesic activity, anti-inflammatory activity, polyherbal formulation

Introduction

Inflammation can be classified as acute or chronic inflammation this has been called "King of Human Miseries."^[1]

Most of the so-called nonsteroidal anti-inflammatory agents have also analgesic activity. Lim and Guzman (1968) differentiated between antipyretic analgesics causing analgesia by blocking impulse generation at pain receptors in the periphery while the narcotic analgesics block synaptic transmission of impulses signaling pain in the central nervous system.^[2] An old but excellent survey on methods being used to test compounds for analgesic activity has been provided by Collier (1964).^[3]

A systematic study of anti-inflammatory effects and use of formaldehyde-induced arthritis and croton oil-induced granuloma

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