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Anti-inflammatory Activity of *Ixora coccinea* Methanolic Leaf Extract

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ABSTRACT -
The anti-inflammatory activity of methanolic leaf extract (MLE) of *Ixora coccinea* Linn. (Rubiaceae) was investigated in this study. MLE showed dose-dependent anti-inflammatory activity in carrageenan-induced rat paw edema model ($r = 0.7$; $P<0.01$). MLE at a dose of 500, 1000, and 1500 mg/kg showed maximum inhibition of edema 36.7, 46.5, and 64.5% respectively ($P<0.01$). Oral administration of MLE of rats at a dose of 1500 mg/kg significantly inhibited peritoneal phagocytic cell infiltration (45.9%; $P<0.05$), impaired nitric oxide (NO) production in peritoneal cells (40.8%; $P<0.01$) and showed anti-histamine activity (54.9%; $P<0.01$). *In vitro* treatment of rat peritoneal cells with MLE inhibited NO production dose-dependently (82.2% at 400 µg/ml, $r = 0.99$; $P<0.05$). MLE also possessed significant, dose-dependent *in vitro* anti-oxidant activity ($r = 0.88$; $P<0.01$; IC_{50} value = 8.0 µg/ml), membrane stabilizing activity ($r = 0.81$; $P<0.01$; IC_{50} value = 6.4 ng/ml) and lipid peroxidation activity (36.7% at 250 µg/ml; $P<0.01$). Thirty-day oral treatment of rats with 1500 mg/kg did not show any adverse signs of toxicity or behavioral changes. These results suggest that anti-inflammatory activity of *I. coccinea* is mediated via inhibition NO production, phagocytic cell infiltration, anti-histamine effect, scavenging of free radicals, membrane stabilizing activity and lipid peroxidation.
KEYWORDS: anti-inflammatory activity, anti-oxidant, cell infiltration, *Ixora coccinea*, membrane stabilization, nitric oxide

INTRODUCTION

Medicinal remedies based on herbs were widely used before the advent of modern pharmacology. Presently about 80% of the world's population relies mainly on medicinal plants as a source of remedies for treatment of disease (1). In Sri Lanka, a wide variety of plants are used in both Ayurveda and traditional medicine for anti-inflammatory effects (2). *Ixora coccinea* Linn. (Rubiaceae) commonly known as *rath mal* in Sinhalese and *vedchi* in Tamil is one of these plants. It is a shrub with small obvate to oval-oblong, rounded to subcordate base leaves on branched hard heavy twigs (2). Different plant parts of *I. coccinea* are used for treatment of various disease conditions some of which are associated with inflammation. A decoction of the flowers is given for haemophytis, acute bronchitis and dysmenorrhoea (2). Further, the flowers and bark are used on reddened eyes and eruptions in children. A decoction of the root is given for dysentery, loss of appetite, fever, and gonorrhea, and as a sedative for hiccoughs and nausea. The leaves are used for dermatological disorders in traditional systems of medicine in Sri Lanka (2).

Previous studies have reported anti-inflammatory effects of aqueous leaf extract of *I. coccinea* using both acute and chronic inflammatory models (3). The aqueous leaf extract was also shown to possess anti-histamine and antinociceptive activities (4). Lupeol isolated from the petroleum ether fraction of ethanol extract of leaves was shown to have anti-inflammatory activity in carrageenan-induced rat paw edema assay (5). In this study we investigated the *in vivo* anti-inflammatory activity of methanolic leaf extract (MLE) of *I. coccinea* using the carrageenan-induced rat paw edema model and it shows potent anti-inflammatory