Amelioration of anaphylaxis, mast cell degranulation and bronchospasm by Euphorbia hirta L. extracts in experimental animals

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**Article (PDF Available)** · November 2017 *with*46 Reads

DOI: 10.1016/j.bjbas.2017.11.001

Abstract

The current investigation was aimed to assess anti-anaphylactic, mast cell stabilizing and anti-asthmatic activity of methanol and aqueous extract of Euphorbia hirta (Euphorbiaceae) on experimental animals. Anaphylaxis was induced by administration of horse serum and triple antigen vaccine subcutaneously in albino Wistar rats. Extracts of E. hirta (EH) were administered to the rats in dose of 250 and 500 mg/kg b.w. orally for 14 days. At the end of treatment, asthma score was measured and various blood parameters like differential count (DC), total WBC count and IgE were estimated. Interleukin (IL)-4, IL-5 and tumour necrosis factor (TNF)-α were measured by ELISA commercial kit from Broncho alveolar lavage fluid (BALF). Histopathological changes of lungs were observed. Anti-asthmatic activity of extracts of EH was also studied on histamine-induced bronchospasm in guinea pigs. In vitro mast cell stabilizing activity of extracts was evaluated on compound 48/80 challenged rat intestinal mesenteric mast cells. The treatment with extracts of EH produced significant decrease in asthma score and they also brought to normalcy the increased total WBC, DC counts, serum IgE, TNF-α, IL-4 and IL-5 in BALF. The histopathological study further supported the protective effect of EH extracts. The pre-treatment with extracts of EH displayed significant reduction in degranulation of mesenteric mast cell numbers. The treatment with extracts of EH significantly increased in time of pre-convulsive dyspnoea (PCD). Thus, these findings concluded that E. hirta could be effectively used in the treatment of anaphylaxis and asthma.

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