

## Biochemical and Cellular Correlates of Essential Oil of Pistacia Integerrima against in vitro and Murine Models of Bronchial Asthma

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**Abstract :** The present investigation aimed to elucidate the probable mechanism of antiasthmatic action of essential oil of Pistacia integerrima J.L. Stewart ex Brandis galls (EOPI). EOPI was investigated for its potential antiasthmatic action using in vitro antiallergic assays mast cell degranulation and soyabean lipoxidase enzyme activit, and spasmolytic action using isolated guinea pig ileum preparation. In vivo studies included lipopolysaccharide-induced bronchial inflammation in rats and airway hyperresponsiveness in ovalbumin in sensitized guinea pigs using spirometry. Data was analysed by GraphPad Prism 5.01 and results were expressed as means  $\pm$  SEM.  $P < 0.05$  was considered to be significant. EOPI inhibits 5-lipoxidase enzyme activity, DPPH scavenging activity and erythropoietin- induced angiogenesis. It showed dose dependent anti-allergic activity by inhibiting compound 48/80 induced mast cell degranulation. The finding that essential oil induced inhibition of transient contraction of acetylcholine in calcium free medium, and relaxation of S-(-)-Bay 8644-precontracted isolated guinea pig ileum jointly suggest that suggesting that the L-subtype Cav channel is involved in spasmolytic action of EOPI. Treatment with EOPI dose dependently (7.5, 15 and 30 mg/kg i.p.) inhibited lipopolysaccharide- induced increased in total cell count, neutrophil count, nitrate-nitrite, total protein, albumin levels in bronchoalveolar fluid and myeloperoxidase levels in lung homogenates. Mild diffused lesions involving focal interalveolar septal, intraluminal infiltration of neutrophils were observed in EOPI (7.5 & 15 mg/kg) pretreated while no abnormality was detected in EOPI (30 mg/kg) and roflumilast (1mg/kg) pretreated rats. Roflumilast was used as standard. EOPI reduced the respiratory flow due to gasping in ovalbumin sensitized guinea pigs. The study demonstrates the effectiveness of EOPI in bronchial asthma possibly related to its ability to inhibit L-subtype Cav channel, mast cell stabilization, antioxidant, angiostatic and through inhibition of 5-lipoxygenase enzyme.

**Keywords :** asthma, lipopolysaccharide, spirometry, Pistacia integerrima J.L. Stewart ex Brandis, essential oil

**Conference Title :** ICI 2015 : International Conference on Immunology

**Conference Location :** London, United Kingdom

**Conference Dates :** September 25-26, 2015