

# Inhibitory Potential of Yucca Gloriosa L. Extract and Isolated Gloriosal Isomeric Mixture on Ovalbumin Induced Airway Hyperresponsiveness in Balb/C Mice

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## Description

*Yucca gloriosa* (Agavaceae) is used in Indian traditional medicine as an antiallergic drug. The ethanol extract was prepared with aerial parts of *Yucca gloriosa* (YGE). Gloriosal isomeric mixtures (GLM) are isolated from the extract, structurally confirmed FIA-MS/MS. Both YGE and GLM are evaluated against ovalbumin-induced airway hyperresponsiveness (AHR) in Balb/C mice. The test drugs (GLM or YGE or Dexamethasone) are administered p.o. prior to challenge with aerosolized 2.5% w/v ovalbumin. Total and differential leucocytes count, Nitrite (NO<sub>2</sub>), Nitrate (NO<sub>3</sub>), Tumor necrosis factor- $\alpha$  (TNF- $\alpha$ ), Interleukin-6 (IL-6), and Interleukin-13 (IL-13) are estimated in bronchoalveolar lavage fluid (BALF). Similarly, Myeloperoxidase (MPO) and Malonaldehyde (MDA) are estimated in lungs. The results reveal a significant increase in total and differential leucocytes counts, NO<sub>2</sub>, NO<sub>3</sub>, TNF- $\alpha$ , IL-6, and IL-13 in ovalbumin induced AHR. However, these parameters are significantly decreased in YGE and GLM treated mice at test doses (YGE 100 & 200 mg/kg and GLM 30 mg/kg). Similar observations are recorded for Myeloperoxidase (MPO) and Malonaldehyde (MDA) in lungs. Pro inflammatory mediators are (TNF- $\alpha$ , IL-6, and IL-13) known that responsible for AHR. Histopathology revealed justify the effectiveness. The present investigations suggest both YGE and GLM are interesting molecules for the further research the treatment of asthma, with an approach through pro-inflammatory inhibitory pathway. Asthma is one of the world's most common long-term respiratory disorders characterized by a specific pattern of inflammation. Global burden of asthma reported (GBAR), over 50 million people in Central and Southern Asia are suffers from asthma.

The disease is estimated to affect as many as 300 million people worldwide, a number that could increase by further 100 million by 2025. WHO also estimates that presently 235 million peoples suffer from asthma worldwide. Asthma statistics estimated that in India 57,000 deaths were reported in 2004 and was considered as one of the leading cause of morbidity and mortality. Asthma is characterized by episodic, reversible bronchoconstriction resulting from increased airway hyperresponsiveness (AHR) of tracheobronchial tree to various stimuli. There is some evidence for the pathophysiological causes of asthma show increased infiltration of inflammatory cells like eosinophils, neutrophils, lymphocytes, monocytes and mast cells. These are intensely found in airway wall biopsies and in bronchoalveolar lavage fluid (BALF) from asthmatic patients. In allergic asthma mast cells play a pivotal role in inflammatory and immediate type I hypersensitive reactions, such as acute bronchoconstrictor responses and hyperventilation.

## Conclusion:

Allergic asthma pathophysiology inflammatory mediators derived from these cells such as histamine, cytokines, leukotrienes, prostaglandins, platelets, free radicals like reactive oxidative species (ROS) and reactive nitrogen species (RNS) etc. Previous studies have demonstrated common approach to quantify histamine in plasma while total and differential cell counts in BALF. While, it was experimentally documented proved that elevated levels of histamine, increases in number and percentage of eosinophils in short-term high-level challenge murine animal's model in BALF, lung tissue and plasma.

## References:

1. Adams J (2014) The balanced diet for you and the planet. La Crescenta: Abedus Press.
2. Fontaine P, Wong V, Williams T, Garcia C, Adams J (2013) Chemical cŽmĐŽÉŠΘŽn and ĀnΘnŽcšcĜĐΘvĜ ĀcΘvšŁLJ of California sagebrush (*Artemisia californica*). *J Pharmacog Phytother* 5: 1-11.
3. Adams J (2012) The use of California sagebrush (*Artemisia californica*) liniment to control pain. *WŚĀđmĀcĜZΘcĀŭÉ* 5: 1045-1053.
4. Adams J, Haworth I, Coricello A, Perri F, Nguyen C, et al. (2017) The treatment of pain with topical sesquiterpenes. In, &đŽnΘĜđÉ in *Natural Product Chemistry, ΣZThđTZAŠmĀn* (ed)
5. Adams J (2005) *Eriodictyon californicum*, Yerba Santa, a review of its ĐđŽĐĜđΘĜÉ and historical uses. *Natural Standard Research Database*. Boston, MA: Natural Standard, ([www.naturalstandard.com](http://www.naturalstandard.com)).