

EFFECT OF ADULSA SYRUP ON MILK INDUCED LEUKOCYTOSISPatel Divyakant A.^{1*}, Patel Yogesh K.², Darji Vinay C.³, Shah Paresh B.⁴¹Ph. D Scholar, Jodhpur National University, Jodhpur, India²Department of Pharmaceutics, Sharda School of Pharmacy, Gandhinagar, India³Department of Pharmacology, Sharda School of Pharmacy, Gandhinagar, India⁴Department of Pharmaceutical Analysis, Amruta School of Pharmacy, Gandhinagar, India

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***Corresponding author**

Email: divyangcognosy05@yahoo.co.in

ABSTRACT

Marketed formulation 'Adulsa syrup' is being extensively used since so many years as a part of Ayurvedic treatment for asthma. The multiherbal preparation, Adulsa containing aqueous extracts of plant and covers most of variety of active ingredients that are used in the antiasthmatic therapies. Marketed formulation Adulsa syrup was evaluated on milk induced leukocytosis for antistress activity and found not significant inhibition. From results of present study it was concluded that Adulsa syrup lacks biological activity.

Keywords: Adulsa syrup, Milk induced leukocytosis, Antistress activity

INTRODUCTION

Marketed formulation 'Adulsa syrup' is multicomponent herbal preparation containing *Adhatoda vasica* used as bronchodilator¹, *Solanum xanthocarpum* used as antihistaminic drug, *Terminalia bellerica* used as antiasthmatic drug², *Glycyrrhiza glabra* used as anti-inflammatory, immunomodulatory drug³ and antithrombotic activity⁴, *Ocimum sanctum* used as adaptogenic drug and *Piper longum* used as bioavailability enhancer⁵ and immunomodulatory. The multiherbal market formulation Adulsa containing aqueous extracts of plants and covers most of variety of active ingredients that are used in the antiasthmatic therapies. The Adulsa syrup is prepared by Omkar Ayurved Mandir, Raigad, Maharashtra. Objective of present study was to evaluate the different batches of Adulsa syrup on milk induced leukocytosis for antistress activity.

MATERIALS AND METHODS**Drugs**

Three batches of Adulsa syrup (Batches no- 889, 891 and 894) were purchased from market and WBC diluting fluid were purchased from Qualigens, INDIA.

Animals

Male Albino Mice (Swiss Strain) weighing 22-25 gm were housed under standard laboratory conditions into group of five each. The animals had free access to food and water. Mice were used for milk induced leukocytosis.

Milk induced leukocytosis in mice

Mice were divided into four groups, five animals in each group. Blood samples were collected from retro orbital plexus. Total leukocyte count was done in each group before drug administration and 24 hour after milk injection (boiled and cooled, 4 ml/kg, s.c.). Blood was sucked in WBC pipette upto the mark and further diluted with WBC diluting fluid. Pipette was shaken for few seconds and kept aside for five minutes. Neubaur's chamber was charged with above fluid and total leukocyte count was done. Group I served as control and treated with vehicle (5ml/kg, i.p) and milk. Group II, III and IV were treated with marketed formulation Adulsa syrup, batch no 889, 891 and 894 respectively. After 1 hour of drug treatment each animal was injected with milk. Difference in total leukocyte count before and after 24 hours of drug administration was calculated.^{6,7}

RESULT

Administration of milk (4ml/kg) by subcutaneous route exhibited significant increase in leukocyte count after 24 hours of administration. In test group pretreated with Adulsa syrup in all

batches of the formulation, there were not significant inhibition was found in leukocytosis. (Table 1)

DISCUSSION

Physical and chemical stressors such as trauma, polluted air exposure, radiation etc has been reported to concurrently produce immunodeficiency and oxidative stress.^{8,9} Suppression of immunity takes place due to exposure to polluted air, leads to respiratory diseases. Reactive nitrogen and oxygen species damages airways and play a role in pathophysiology of asthma so, a drug having antistress activity induces a state of non specific increased resistance (SNIR) against a variety of stress.^{10,11}

An important feature of the adaptogens (anti stress agents) is to increase the capacity of organism's resistance to various adverse effects of a physical, chemical and biological nature.¹² After parenteral administration of milk there is increase in total leukocyte count, which is responsible for different allergic reaction and this condition can be made normalized by administration of antistress or adaptogenic drug.

It was found that after 24 hours of parenteral administration of milk (4 ml/kg, s.c.) there is increase in leukocyte count. In present study all three batches of Adulsa syrup were not inhibited the milk induced leukocytosis so there may be chances of poor solubility of drugs in water or interbatch variation in uniformity of content of the biomarkers in formulation.

CONCLUSION

The investigation of present study concluded that Adulsa syrup lacks biological activity.

Table1: Effect of Adulsa syrup on milk induced leukocytosis in mice.

Sr. No	Treatment (Dose)	% change in Leukocytes 24 hour after milk treatment (Mean ± SEM)
1	Vehicle + Milk (10ml/kg, i.p; 4 ml/kg s.c)	115.73 ± 2.88
2	Formulation 889 5ml/kg	107.95 ± 3.9
3	Formulation 891 5ml/kg	112.53 ± 7.16
4	Formulation 894 5ml/kg	108.28 ± 15.06

n = 5 in each group.

Table showed that the formulations were without any significant effect in this experiment.

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