CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES
SJIF Impact Factor: 7.187
https://doi.org/10.5281/zenodo.7378032

Available online at: http://www.iajps.com *Review Article*

A REVIEW ON EUPATORIUM ADENOPHORUM ANTI-INFLAMMATORY GEL

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Article Received: September 2022 **Accepted:** October 2022 **Published:** November 2022

Abstract:

Herbal formulation means a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetics benefits meant for use to diagnose, treat, mitigate disease of human beings or animals.The main aim of the present study is to evaluate and formulation of herbal gel containing extract from the leaves of eupatorium adenophorum for its topical anti-inflammatory activity against carrageenan induced odema .1%w/w concentration of Carbopol -934 is used as gelling agent in this study. The leaves are dried under shade and then powdered coarsely with mechanical grinder. The powder leaves extracted with methanol as solvent by using hot extraction using Soxhlet apparatus. The residue is formed after filtered while preparing gel formulation in the extract residue gelling agent and triethanolamine few quantities is added to adjust ph. To evaluate the formulation through following parameters ph., stability, spreadability, extrudability, and stability also examined. The ph. For all formulation was near about 6.8, which lies in the normal ph. range of the skin. The preparation was stable under normal storage condition and did not produce any skin irritation., erythema and oedema for about month, when over the skin.

Keywords*: Eupatorium adenophorum, Carbopol -934, Carrageenan, Stability, Oedema.*

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Please cite this article in press C.Mohana et al, ***A Review On Eupatorium Adenophorum Anti-Inflammatory Gel.,****Indo Am. J. P. Sci, 2022; 09(11).*

INTRODUCTION:

Inflammation is the body's way of dealing with infections, maintaining a subtle balance between the beneficial effects of inflammation cascades to restrict the infection and potential for long-term tissue destruction [1-3]. If not controlled, inflammation can lead to development of diseases such as chronic asthma, rheumatoid arthritis, multiple sclerosis, inflammatory bowel disease, and so forth, [4-9]. Till date a very few anti-inflammatory drugs from herbal origin have been found, and a number of plants from ethno-medicinal databases are under laboratory investigation across the World [10]. Herbal formulation means a dosage form consisting of one or more herbs or processed herbs in specified quantities to provide specific nutritional, cosmetics benefits meant for use to diagnose, treat, mitigate disease of human beings or animals. alter the structure or physiology of human beings or animals and major use of herbal medicine is for health promotion and therapy for chronic, as opposed to life threatening, conditions. However, usage of traditional remedies increases when conventional medicine is ineffective in the treatment of diseases, such as in advanced cancer and in the face of new infectious diseases. The herbal gels are a type of herbal formulation which includes a gelling agent and solubilizers. Depending on the excipient used, a gel can be transparent (most common), translucent, or opaque. The anti-inflammatory herbal gel is one type of category in herbal gel formulation. in present review, by using eupatorium adenophorum the herbal gel was prepared. The plant Eupatorium adenophorum Spreng. (Figure 1) belongs to the family Asteraceae (Compositae) [11]. And it is also known as Ageratina Adenophora and it is commonly called as Crofton weed it is a flowering plant and active constituents present in eupatorium adenophorum are phenolics, terpenoids, coumarins, alkaloids, flavonoids, and essential oils. It is commonly used in folklore medicine in different parts of the world [12-19]. In Kurseong and Darjeeling hill region of the Eastern Himalayas, local people use leaves of *E.* adenophorum Spreng., growing at an altitude of 800–2050 m, for remedial purposes against oral and skin sores. These observations suggested a probable anti-inflammatory and immunomodulatory activity of the plant's leaf extract. Earlier Mandal et al. [20] reported analgesic property of methanolic extract of the leaves. The present investigation intends to explore the anti-inflammatory property of ethanolic leaf extract of *E. adenophorum* SprengThe plant Eupatorium adenophorum Spreng. Not only exhibits anti-inflammatory but also exhibits anti-microbial, anti-oxidant, cytotoxic, and also wound healing. A number of plants of this family are commonly used in folklore medicine in different parts of the world [12-19]. In Kurseong and Darjeeling hill region of the Eastern Himalayas, local people use leaves of *E. adenophorum* Spreng., growing at an altitude of 800–2050 m, for remedial purposes against oral and skin sores.

These observations suggested a probable anti-inflammatory and immunomodulatory activity of the plant's leaf extract. Earlier Mandal et al. reported analgesic property of methanolic extract of the leaves. The present investigation intends to explore the anti-inflammatory property of ethanolic leaf extract of *E.* adenophorum Spreng. (EEA) in delayed type hypersensitivity (DTH) induced by 2,4-dinitrofluorobenzene (DNFB) since inflammation is a pathophysiological response of living tissues to injuries that leads to the local accumulation of plasmatic fluid and blood cells1 and if not controlled, it can lead to development of diseases such as chronic asthma, rheumatoid arthritis, multiple sclerosis, inflammatory bowel disease, and so forth ,the present study was designed to formulate and evaluate the herbal gel formulation containing methanol extract of eupatorium adenophorum leaves for its anti-inflammatory potential in carrageenan induced paw oedema in rat.

MATERIALS AND METHODS:

2.1 Preparation of methanolic extract

E. adenophorum Spreng were collected from Rajpur Road, Dehradun (Uttara Khand) and authenticated by Botanical Survey of India, Northern Regional Centre, Dehradun with 113 the Accession number 1127802, 1127803. The leaves were dried under shade and then powdered coarsely with a mechanical grinder. The powder was passed through sieve No. 40 and stored in an airtight container for further use. Hundred grams of powdered leaves were extracted with methanol as a solvent by hot extraction method using Soxhlet apparatus. The resulting extract was cooled and filtered. The filtrate was evaporated in vacuum to give a residue.

2.2 Formulation of topical preparation

Herbal gel was prepared using carbopol-934 as a gelling agent in 1% w/w concentration with deionized water using mechanical stirrer. The pH of the gel was adjusted to neutral by addition of small quantities of triethanolamine with continuous stirring. 1 % w/w herbal extract of E. adenophorum was added to the gel and stirred for sufficient time for homogeneous mixing of extract in gel base. Prepared gel was filled in collapsible tubes and stored at a cool and dry place. Physical parameters such as colour, appearance, and feeling on application were recorded. pH of the gel was recorded using a pH meter.

3.EVALUATION PARAMETERS:

3.1 VISCOSITY

The viscosity of gel was measured by using group field viscometer with spindle #7prepared the gel with different concentration of Carbopol-934 and setup the base level of the instrument using a level of indicator then the spindle was cleaned and attached to the instrument and the spindle was rotated in the gel until a constant reading displaced on the viscometer repeat this method for three times and find out the average value.

3.2 EXTRUDABILITY [20]

The weight of the tube was recorded, and the tubes are placed between two glass slides clamped.500gms of gel are placed over the slide and then cap was removed, and the amount of extruded gel is collected and weighed. The percentage of extruded gel is calculated.

3.3 SPREADABILITY [21]

Spreadability was determined by the apparatus which consist of a wooden block which was provided by a pulley at one end and by this the method of spreadability was measured on the basis of slip and drug characteristics of gels.

$$S = M \times L / T$$

where:

S= spreadability
M= weight in the pan
L= length moved by a glass slide

3.4 STABILITY STUDY [22]

The stability study was performed as per ich guidelines and the gel was filled in collapsible tube and stored at different temperature and humidity condition viz; ,25±2 ºC / 60±5% RH, 30±2 ºC / 65±5% RH, 40±2 ºC / 75±5%, RH. For a period of three months and studied for appearance, ph., and spreadability.

3.5 PRIMARY DERMAL IRRITATION INDEX:

The dermal irritation is the production of reversible damage to the skin following application of test substance for 4 hours. The primary dermal irritation index is a method for classifying topical formulation into various categories:

- Based on acute toxic reaction upon single application of formulation on skin
- Based on primary dermal irritation index score
- Formulation can grade as an irritating or non-irritating

APPLICATION OF HERBAL GEL:

Half a gram of the herbal gel, as the test substance, was applied to an area of approximately 6 cm2 of skin and covered with a gauze patch. The patch was loosely held in contact with the skin by means of a suitable semiocclusive dressing for 4 hours and was

then removed. At the end of the exposure period, i.e., 4 hours, residual test substance was removed without altering the existing response or the integrity of the epidermis. Observations were recorded an hour after the removal of the patch. Control animals were prepared in the same manner and 0.5 gram of the gel base, i.e., gel formulated using all the ingredients except the herbal mixture, was applied to the control animals and observations were made similar to the test animals. Both the control and the test animals were observed every day for any occurrence of skin irritation or toxic reactions such as oedema or erythema. Per observation of skin, a value between 0 and 4 was recorded where 0 meant no skin erythema and eschar formation and 1, 2, 3 and 4 stood for very slight, well defined, moderate, and severe erythema to eschar formation, respectively. It also scored from 0–4, where 0 stood for no oedema and 4 stood for severe oedema.

CONCLUSION:

Based on that all review articles I can concluded that eupatorium adenophorum**.** The above investigation have been described about the herbal gel formulation from the eupatorium adenophorum leaves extract for its anti-inflammatory and which is also used as anti-oxidant, anti-microbial, cytotoxic, and for wound healing in herbal medicine and it possess significant topical anti-inflammatory properties, supporting their traditional uses for the treatment.

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