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Assessment of *In Vitro* Anti-inflammatory activity of Various Herbal Extracts

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ABSTRACT

ORIGINAL RESEARCH ARTICLE

Plants have played a significant part in human health care since the ancient times. Traditional plants exerts great role in discovery of new medicines. Majority of human population worldwide is getting affected by inflammation related disorders. It's believed that current analgesia inducing medicines such as opiates and NSAIDS aren't useful in all cases, because of their side effect like GIT irritation, liver dysfunction and much further. Large number of herbal species has been used traditionally or as folk drugs against seditious diseases. Therefore, the discovery of a new generation of therapeutic agents to use in the resolution of inflammation is desirable. The treatment of inflammation involves some mechanisms that can be used as therapeutic targets. Thus, it was planned to assess anti-inflammatory activity of various herbal extracts.

INTRODUCTION

The demand for herbal medicinal products and materials is rising, and maintaining their quality is therefore becoming increasingly important. Numerous physical, chemical, and geographical factors that affect these materials' quality also affect the quality of the herbals. In addition, the quality of herbal materials is becoming increasingly a concern due to adulteration. The quality characteristics of the herbal material the herbal pharmaceuticals are assessed using a variety of chemical and phytochemical tests, analytical techniques, and hyphenated analytical techniques. Formulations made from herbs are now widely accepted as effective treatments for many ailments. [1-2] Inflammation is the immune system's response to harmful stimuli, such as pathogens, damaged cells, toxic compounds, or irradiation and acts by removing injurious stimuli and initiating the healing process. In other words Inflammation is the major and complex reaction of the body against infection upon tissue injury. The role of inflammation as a healing, restorative process, as well as its aggressive role, is also more widely recognized today. But in some conditions appears to be no resolution and a chronic state of inflammation develops that may last the life of the individual. The scientific community has shown increased attention in establishing a connection between a plant's pharmacological activity and its phytoconstituents and botanical characteristics. [3] The discovery of novel drugs has been significantly aided by plant extracts and extracted phytoconstituents. Therefore, the discovery of a new generation of therapeutic agents to use in the resolution of inflammation is desirable. The treatment of inflammation involves some mechanisms that can be used as therapeutic targets. Thus, it was planned to assess anti-inflammatory activity of various herbal extracts.

EXPERIMENTAL WORK

Collection of plant material

Flowers of *Nigella indica* were collected from the local forest area of Bhopal, Madhyapradesh state of India. Flowers were first

washed with running water to remove dirt and other waste materials, after that it was rinsed with distilled water and dried under shade for extraction purpose.

Preparation of plant extracts

The flowers of *Nigella indica* were shade dried, powdered and defatted with using petroleum ether (60-80^{0}C) and successively extracted with ethyl acetate and methanol. Extracts were filtered through vacuum filter and all the filtrates were concentrated in vacuum evaporator. [4]

Evaluation of Anti-inflammatory Activity of Plant Extracts

Evaluation of Anti-inflammatory Activity of Plant Extracts were done as pr the following experimental plan

Group I: Control group

Group II: Standard drug-Naproxen

Group III: Petroleum ether extract of *Nigella indica* at 200 mg/kg, p.o

Group IV: Ethyl acetate extract of *Nigella indica* at 200 mg/kg, p.o

Group V: Methanol extract of *Nigella indica* at 200 mg/kg, p.o

Carrageenan-induced paw edema in rats

There were five groups of six albino wistar rats each, after the animals were separated. An injection of 0.1 ml of 1% carrageenan solution was used to produce oedema in the right hind paw's sub-plantar region, one hour following the pre-treatment with medicines from the relevant groups. Using a digital vernier calliper, the paw size was first measured at 0 hours after injecting the carrageenan solution and subsequently at 1, 2, 3, and 4 hours. [5-6]

RESULTS AND DISCUSSION

Preparation of plant extracts

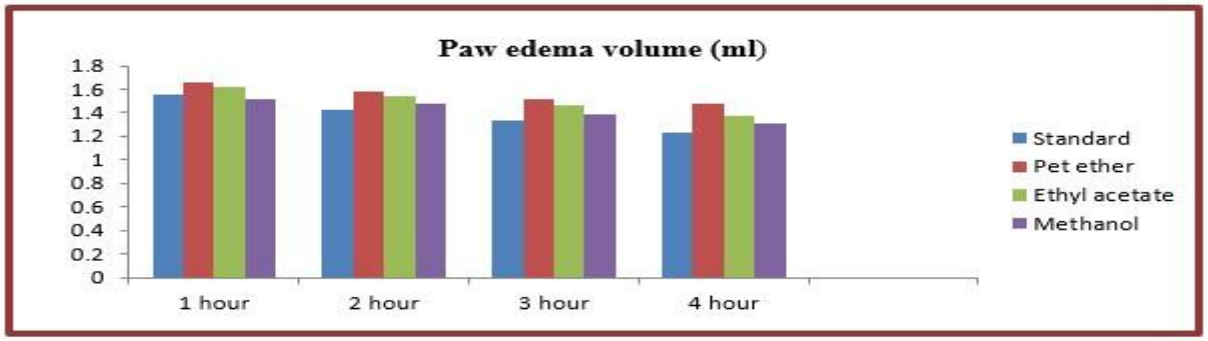
The flowers of *Nigella indica* were shade dried, powdered and defatted with using petroleum ether (60-80^{0}C) and successively extracted with ethyl acetate and methanol. Extracts were filtered through vacuum filter and all the filtrates were concentrated in vacuum evaporator. Dried extracts were used for t he further study. The findings were observed and recorded in table 1

Table 1 Findings of Preparation of plant extracts

S.N.	Solvent	Extraction (hrs)	Colour	%Yield
1	Petroleum ether	06	Brownish	3.5
2	Ethyl acetate	12	Greenish Brown	4.2
3	Methanol	12	Dark Green	4.8

Evaluation of Anti-inflammatory Activity of Plant Extracts

The present study is undertaken in an aim to screen the efficacy of anti-inflammatory potential of petroleum ether, ethyl acetate and methanol extracts of *Nigella indica* in experimental rats. In the present study, the acute inflammation was experimentally induced by Carrageenan to determine the anti-inflammatory activity of *Nigella indica* in rats. After Carrageenan injection the rat paw edema volume was measured every one hour (up to 4h) in all experimental rats. The findings were recorded in Fig 1



CONCLUSION

Attraction has re-focused in traditional medicine, simply because of the higher cost of modern drugs, time and expenditure which is essential to bring a drug to market after proper clinical tests, severe side-effects of a variety of modern drugs, and drug-resistance developing in both microorganisms and parasites. So, researchers are currently taking an active interest in traditional medicinal preparations of native peoples, which are plant-based. The findings were confirmed the potential use of these plant extracts for anti-inflammatory activity in suitable form. Methanolic extract was found more significant when compare to others.

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