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Research Article

PREPARATION AND EVALUATION OF HERBAL GEL FORMULATION OF *CISSUS VITIGINEA* LEAF

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ABSTRACT

Herbal medicines are still being main stay about 75-80% of this world population. Mostly, In developing countries of primary health care due to better cultural acceptability and better compatibility with human body, reduced side effects. Herbal medicines are consist of plant and its parts to treat injuries, diseases or illness which is used to prevent, treat the ailments or to promote the health, healing. A drug or formulation made from plants which are used for any to such purpose. Herbal medicines are oldest form of healthcare profession of known to mankind gel formulations prepared with Carbopol 934, produced good homogeneity, good stability, and no skin irritation and anti-microbial activity.

KEYWORDS: *Gel formulation, Carbopol 934, Cissus vitiginea leaf, Ethanol extract, Anti-Microbial activity.*

INTRODUCTION

Plant has an important source of medicine with added qualities for thousands of years which used medicinally in various countries, moreover, the sources of many potent and powerful drugs, especially on traditional remedies like herbs for their history and also have been used as popular folk medicine [1].

Skin: [2, 3]

One of the most extensive ,readily accessible part of human body, average human being cover an area of about 2 square meter ,weights 4.5-5kg , about 16% of body weight and it also perceives 1/3 rd of total blood supply. In most of the topical preparation to be applied on the skin, hence basic knowledge of skin and physiological, biochemical functions are very important for designing topical formulations. The PH of the skin varies from 4-5.6.sweat, fatty acids secreted from sebum influence the PH of the skin surface which is suggested that acidity of the skin helps in limiting or preventing the growth of pathogens, other organisms.

Anatomy &physiology of skin: [2, 4]

Skin is multilayered organ, automatically have many histological layers, and it's an anatomic barrier between the body and its environment which contributes to about 16-18% of normal body weight. The outer covering layer are called as epidermis, below the epidermis layer are called as dermis. Below the dermis are subcutaneous fatty tissues.

Gel:

It is a solid, jelly like material which can have properties ranging from soft and weak, to hard, tough. It may define as a substantially dilute cross linked system which exhibits no flow during at the steady- state. By weight, gels which are mostly liquid, yet they can behave like solids because of three dimensional cross- linked network among the liquid. Some of the gels display thixotropy- they can become fluid when agitated, but re solidify during rest. Generally gels are apparently solid, jelly – like materials. By replacing the liquid with gas which is possible to prepare aero gels and materials with exceptional properties with including very low density, high specific surface areas, excellent thermal insulation properties , many substances can produce gels when a suitable thickeners or gelling agents are added to their formula. Those approaches are common in manufacture of wide range of products from foods to paints, adhesives.

Herbal medicines: [5-7]

Since, the births of mankind, there have been a relationship between life, disease and plants. But there is no record that people in prehistoric times were used allopathic or synthetic medicines for their ailments even they can tried to make use of things which they could easily procure. One of the most common things which they could find was there is in environment that is, the plants and animals.

WHO (world health organization) may defined as herbal medicines are finished , labeled medicinal products which contain active ingredients, aerial or underground parts of the plants or other plant material or combination. Now a days , herbal medicines were reached widespread acceptability as therapeutic agents such as anti-microbial, anti-diabetic, anti-arthritic, anti-anxiety, anti HIV, anti-depressant, anti-ageing, asthma, Alzheimer's disease, treatment of cirrhosis and enhancing memory activities. The screening of plant extracts and natural products for antimicrobial activity has shown that higher plant represent a potential source of new anti-infective agents, well as serving drug discovery from natural products for primary lead compound. Traditional antibacterial therapy is going through a crisis due to the rapidly increasing development of resistant to existing agents. Such resistance has an impact on all areas of chemotherapy. moreover assortment of literature ,Cissus vitiginea leaves extract exhibited very low toxicity which is safe in human and animal use [8], anti-oxidant property [9], anti-cancer [10], root having anti-microbial activity [11], stem bark used to conjunctivitis [12] the ethanolic leaf extract of Cissus vitiginea screened for the presence of different biologically active secondary metabolites are triterpenoids, steroids, glycosides, alkaloids,flavonoids, sugar, tannins, proteins, and coumarin and antimicrobial activity [13].

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MATERIALS AND METHODS

Drug and Polymer Profile:

Plant Profile: [14]



Fig. 1: ***Plant of Cissus vitiginea L.***

The plant Cissus vitiginea L belongs to vitaceae family .it is a small erect shrub distributed throughout all district of south India and also srilanka.

Botanical name *: Cissus vitiginea*
Family *: Vitaceae*
Synonyms *: Cissus angulata*
Cissua vitifolia salisb
Vitis vitiginea

Description: [15, 16]

Woody straggling or climbing shrubs. Branchlets densely pubescent, tendrils simple, stout. The plant height was about of 50-60cm. stem, leaves and inflorescence clothed with short gray pubescence.

Leaves simple, broadly cordate, lobed, pubescent, dentate, and acuminate. Flowers pale yellow, in dichotomous cymes. Berried ovoid, purple when ripe. Leaves are 2-4 inch long , broad palmate 3-5 angled or lobed slightly cordate or retusely truncate at the base and coarsely ,irregularly serrate, tendrils simple, petals-4,triangular-ovate, stamens 4, filaments slender, anthers are oblong. Ovary 2 celled.2 ovules in each cell.

Fruit 1/3 inch, 1 seeded occasionally two seeds, colour of fruit bluish black, oblong, pruinose, and pedicles, recurved.

The plants were collected from local area of Palakkad, Kerala. The plant was authentified by Agri Economics, Regional Agri Research Station, Pattambi, Palakkad, and Kerala. ***Cissus vitiginea*** leaves were washed with tap water and dried under shade for about 20 -25 days and made to course powder and stored in a container for further studies. .The powdered parts of the leaves of *Cissus vitiginea* were packed in the Soxhlet extractor and extracted with 99% ethanol.

Preparation of gel: [2]

Accurately weighed Carbopol 934 was taken in a beaker ,added in 50ml of distilled water , then the beaker set aside to swell the Carbopol for 30 minutes ,stirring should be done by using mechanical/lab stirrer at 1200 rpm for half an hour. Add 5ml of propylene glycol and taken required quantity of leaf extract. in another beaker was taken 5ml of propylene glycol, added weighed quantity of propyl paraben and methyl paraben to it, stirred thoroughly .all the Carbopol dispersed, later ,1gm leaf extract ,preservatives solutions were added with constant stirring. Finally, volume made up to 100ml followed by adding remaining distilled water , triethanolamine was added drop wise to the formulations for a adjustment or maintaining of required Ph 6.8-7 and to produce the gel at required consistency.

Antimicrobial Studies: [17]

The 25,50,100, 200µg/ml of ethanol extract were used to find out the anti-microbial properties using gentamycin (10µg/ml) as a standard against various strains of gram positive , gram negative bacteria. The nutrient agar medium was prepared and sterilized by autoclave at 15 ibs pressure 120^{o}C for 15 minutes, then aseptically poured the medium into the sterilized Petri plates and allowed to solidify the bacterial; broth culture was swabbed on each Petri plates using sterile buds. Then wells were made using cork borer on the solidified medium. The ethanol extract of plant leaves to each well aseptically. The same techniques were repeated for each Petri plates were incubated at 37^{o}C for 24 hrs after incubation the plates were observed zone of inhibition.

RESULTS AND DISCUSSIONS

The present study on the ethanol extract leaves of *Cissus vitiginea*. The newly formulated gel containing *Cissus vitiginea extract leaf was evaluated by various methods .the prepared gel was soluble in water, ether and chloroform,* pH of the herbal gel was found to be 6.1 which shows that was compatible with skin secretions and also produces uniform distribution of extracts in gel, spredability was found to be 15gm cm/sec easily washable and non-irritable to the skin. The concentration 200µg/ml of ethanol extract of ***Cissus vitiginea*** leaf exhibited significant activity against antibacterial organisms when compared to standard. The concentration of 50µg/ml & 100µg/ml showed moderate antibacterial activity when compared to standard. The concentration 25µg/ml possesses mild to moderate activity of antibacterial organism when compared to standard drug.

Table No. 1: Anti-bacterial activity of ethanol extract leaves of *Cissus vitiginea*

S. No.	Organism	Concentration of Ethanolic extract & Zone of Inhibition (mm)				
		25µg/ml	50µg/ml	100µg/ml	200µg/ml	Standard (µg/ml) (gentamycin)
1	E.Coli	11	24	15	38	40
2	*B.Subti*lis	20	21	22	36	38

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Table No. 2: Formulation of herbal gel

S. No.	Ingredients	Working formula (50g)
1	Carbopol 934	0.5g
2	Sodium Edetate	0.005g
3	Triethanolamine	1 ml
4	Propylene glycol	2.5ml
5	Plant extract	1g
6	Dist.water	Qs to 50 g

CONCLUSION

From the present study, based on the result which has been concluded that the plant leaves of Cissus vitiginea are highly valuable in medicinal usage against treatment of various human ailments and also had well anti-bacterial activity along with different chemical constituents present in it. Moreover plants are important source of potentially useful compounds for the development of new therapeutic agents.

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