

To Prepare and Evaluate Herbal Antimicrobial Gel

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Abstract: The main Objective of the project is to prepared and evaluate herbal antimicrobial gel formulation was done on the basisNeem, Tulsi, Curry Leaves. The above mentione plant are good antimicrobial, anti inflammatory, antioxidant properties. Antimicrobial Gel are prepare and measures by the Consistency, viscosity, Determination of spreadability, skin irritation test, Stability.

Keywords: Holy basil, Ocimum sanctum L, Murrayakoenigii, Ethanol (95%) Gel Base: Carbopol 940 Stabilizers ,Preservatives: (Methyl paraben, Propylparaben)

I. INTRODUCTION

Herbal antimicrobial gel is a natural substance used in combination with a medicine obtained from a natural source which are used to kill microorganisms. The use of medicinal plants in traditional medicine has been described in back several 1000 years. Books on Ayurvedic medicine, written in the Vedic period (3500–1600 B.C.) describe practices, including the use of medicinal plants. Plants such as neem, tulsi, curry leaves there are the primary source of therapeutics and each part of the plant, including the seeds, root, stem, leaves, and fruit, potentially contains bioactive components.

1) NEEM



Fig No.1

Synonyms: Antelaazadirachta (L. Adelb., MeliaazadirachtaL.

Biological Source: It is obtained from fully matured

Family: Seeds of Azadirachtaindica Linn. Meliaceae

Chemical Constituents: It contains glycerides of saturated and o unsaturated fatty acids.

Uses

Nearly all parts of the neem tree are useful, its show antibacterial and antifungal properties.

Neem is commonly used in shampoos for treating dandruff and in soaps or creams for skin conditions such as acne, psoriasis, and athlete's foot.

It is also use in some toothpastes and mouthwashes.

2) Tulsi



Fig no.2

Synonyms : - Sacred basil, Holy basil.

Biological Source :- Tulsi consists of fresh and dried leaves of *Ocimum sanctum* Linn., belonging to family Labiatae.

Chemical Constituents:- It contains approximately 70% eugenol, carvacrol (3%), and eugenolmethyl-ether (20%). It also contains caryophyll-lin. Seeds contain fixed oil with good drying properties.

Use

- The fresh leaves, its juice and volatile oil are used for various purposes.
- The oil is antibacterial and insecticidal.
- The leaves are used as stimulant, aromatic, spasmolytic, and diaphoretic.

3) Curry leaf



Fig No.3

Synonyms: Curry Leaf English, MithaNeem in Hindi, and Surabhiniimba in Sanskrit.

Biological source: Curry Leaf consists of the fresh and dried leaves of *Murrayakoenigii*.

Family: Rutaceae.

Chemical constituents: linalool, geranyl acetate, myrcene, allo-ocimene, α -terpinene.

Uses

ant diarrheal, anti-inflammatory,
antifungal, blood purifying.

II. MATERIAL AND METHOD

Plant material:- Fresh leaves of NeemTulsi , curry tree

Gel Base :- Carbopol940

Herbal extract:- Neem, Tulsi, Curry Leaves.

Preservatives :- Methyl paraben, Propylparaben

Stabilizers :- Glycerin

Formulation.

Gel base preparation:- Accurately weighed Carbopol 934 was taken and form gel base.

Preparation of herbal extract :- To prepare the herbal extract by using distilled water.

Incorporation of herbal extract :- Measures the quantities herbal extract and mixed thoroughly into the gel base at the controlled temperature.

III. EVALUATION

PH Determination

A digital pH meter was used for the determination of pH of the prepared gel formulation.

Appearance

A visual inspection was done in order to check the physical appearance and the homogeneity of the prepared gel formulation.

Spreadability

About one gram of sample was weighed and placed at central of glass plate and another glass plate was placed over it carefully about glass plate 100 gram weight was placed up on upper slide so that the formulation between two was pressed uniformly to form a thin layer the weight was removed the excess of formulations adhering to the slide was scrapped of one of the slide was fixed on which the formulation was placed the time in which upper slide moves over the lower plate was taken as measured of spreadability. Spreadability is calculated by using formula.

$$S = \frac{M \times L}{T}$$

Where, M= weight on the slide

L= Length moves on the slide,

T= Time is taken.

Viscosity

Viscosity of gel was measured using Brookfield viscometer with a spindle number 6 at 100 RPM

Skin irritation test

It was performed on 10 healthy volunteers comprising of both male and female.

Antimicrobial Activity

Evaluation and antimicrobial activity can be done by using disc plate method

IV. CONCLUSION

The herbal gel is to be certainly beneficial as a supplement to mechanical therapy in the prevention and treatment of tropical skin illness. Also serve a multipurpose product that use in rashes, dry skin, irritation and local infection etc. From the study we can conclude that, Herbal antimicrobial gel containing Tulsi, curry leaves, neem was successfully prepared and evaluated. From the evaluation of the herbal antimicrobial gel, we can conclude that formulation has a potent antimicrobial activity evaluated against the bacteria.

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REFERENCES

- [1]. Krishnan, siva. (2018). Traditional herbal medicines - a review. 5. 611-614.
- [2]. Kumar VS, Navaratnam V. Neem (Azadirachta indica): Prehistory to contemporary medicinal uses to humankind. Asian Pac J Trop Biomed 2013;7:505-14.
- [3]. Krishnan Y, Wong NK. Cytotoxicity and antimicrobial properties of neem (Azadirachta indica) leaf extracts. Int J Pharm PharmSci 2015;7:975-1491.
- [4]. Ketkar A. Y., Ketkar C. M. Various uses of neem products. In: Schmutterer H., editor. The Neem Tree. Weinheim, Germany: John Wiley & Sons; 2004. pp. 518-525. [DOI] [Google Scholar].
- [5]. Singh N., Sastry M. S. Antimicrobial activity of Neem oil. Indian Journal of Pharmacology. 1997;13:102-106. [Google Scholar].

- [6]. Alzohairy MA. Therapeutics role of Azadirachta indica (Neem) and their active constituents in diseases prevention and treatment. Evid Based Complement Altern Med 2016;2016:7382506.
- [7]. Agarwal P, Nagesh L, Murlikrishnan Evaluation of the antimicrobial activity of various concentrations of Tulsi (Ocimum sanctum) extract against Streptococcus mutans: An in vitro study. Indian J Dent Res. 2010;21:357–9. doi: 10.4103/0970-9290.70800. [DOI] [PubMed] [Google Scholar].
- [8]. Ch. V. R. Devi, L. S. Naik, P. Shyam, K. P. Marx and S. Baskari, Antimicrobial Activity and Phytochemical Analysis of Ocimum tenuiflorum Leaf Extract, IJPRIF, 2015, 8(1): 88-95.
- [9]. M. A. Kelm, M. G. Nair, G. M. Strasburg and D. L. DeWitt, Antioxidant and cyclooxygenase inhibitory phenolic compounds from Ocimum sanctum Linn., Phytomedicine, 2000, 7(1): 7-13.
- [10]. Binduהלואט et al. 2019. Pharmacological activities of ocimum sanctum (tulsi): a review. 5(1), 104-109.
- [11]. Yamani, h. A., pang, e. C., mantri, n., & deighton, m. A. (2016). Antimicrobial activity of tulsi (ocimum tenuiflorum) essential oil and their major constituents against three species of bacteria. Frontiers in microbiology, 7, 681. <https://doi.org/10.3389/fmicb.2016.006810>.
- [12]. Irfan, uma&ali, sarah. (2016). The antibacterial effect of curry leaves (murrayakoenigii). European journal of pharmaceutical and medical research. 3. 382-387.
- [13]. Anita rana and yamini. Antimicrobial properties and phytochemical analysis of different extracts of murrayakoenigii. J pharmacognphytochem 2022;11(6):01- 06.
- [14]. Victoriyasalomi, m., and manimekalai, r. 2016. Phytochemical analysis and antimicrobial activity of four different extracts from the leaves of murrayakoenigii. j.curr.microbiol.app.sci. 5(7): 875-882
- [15]. Navindgikar, nikhil&kamalapurkar, k. &chavan, prashant. (2020). Formulation and evaluation of multipurpose herbal cream. International journal of current pharmaceutical research. 25-30. 10.22159/ijcpr.2020v12i3.38300.