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FORMULATION AND EVALUATION OF HERBAL OINTMENT CONTAINING TULSI AND MANGO GINGER EXTRACT

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ABSTRACT

This study focuses on creating and testing a herbal ointment made from tulsi (ocimum sanctum) and mango ginger (curcuma amada) extracts, known for their healing properties. The goal was to make a natural ointment that can help with various skin problems. The ointment was made using an simple base mixed with the extracts of tulsi and mango ginger.the extract of tulsi and mango ginger was prepared from the maceration method and ointment was prepared by mixing both extract to the ointment base by levigation method. After the formulation was completed the evaluation of physicochemical properties like colour ad odour, consistency, ph, spreadability, excrudability solubility, washability and non irritatancy test. The antimicrobial activities of the formulated ointment were tested using standard assays to determine its efficacy in preventing microbial infections.

Keywords: Maceration, Levigation, Solubility, Consistency, Spreadability, Excrudability Antimicrobial Activities, Anti Carcinogenic.

I. INTRODUCTION

Tulsi, also known as Holy Basil and scientifically named Ocimum Sanctum or Ocimum tenuiflorum, belongs to the Lamiaceae family. This Revered herb, native to the Indian subcontinent and widely cultivated Across Southeast Asia, is celebrated for Its extensive medicinal Properties. Tulsi holds a significant place in Ayurvedic medicine and Isrecognized for its potent antimicrobial activities, making it an effective Natural remedy for various infections.Tulsi is a powerful herb with Significant antibacterial, antifungal, anti-inflammatory, antioxidant, Analgesic, immunomodulatory, and wound healing properties. Using Tulsi In ointment formulations provides an effective and natural solution for Treating skin infections, highlighting the importance of integrating Traditional herbal remedies with modern pharmaceutical applications. This approach not only enhances the therapeutic potential of natural Products but also offers safer alternatives for managing fungal and Bacterial infections.Mango ginger, scientifically known as Curcuma Amada, belongs to the Zingiberaceae family, which is commonly referred To as the ginger family. This unique rhizome, native to the Indian Subcontinent and Southeast Asia, is distinguished by its mango-like Aroma and flavor, unlike common ginger. Mango ginger holds a Significant place in traditional medicine due to its wide range of Therapeutic properties.

II. MATERIAL AND METHODS

Collection of plants material

The Tulsi leaves were collected from in Shivgita Udhyan and the dried Rhizomes of Mango ginger were purchased from the local market of Thane.

Preparation of Tulsi extract

The leaves of the tulsi were collected and washed with distilled water and shade for 5 days. After drying, the leaves were ground into powder by using grinder. 25gm powder was imbibed with 90ml of 90% ethanol for 3 hours in a conicalflask and the addition of 40ml of 90% ethanol for maceration process for 7 days with occasional stirring. Finally ethanol extract was collected and concentrated to get blackish green residue.the extract was stored in the airtight container at cool and dark place.

Preparation of Mango ginger extract

Dried rhizomes of mango ginger were ground and the powder obtained was followed for extraction same as that for tulsi leaves extract. The extract with crimson red colour was obtained and stored at cool and dark place in air tight container.

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Fig.1 – Maceration Process

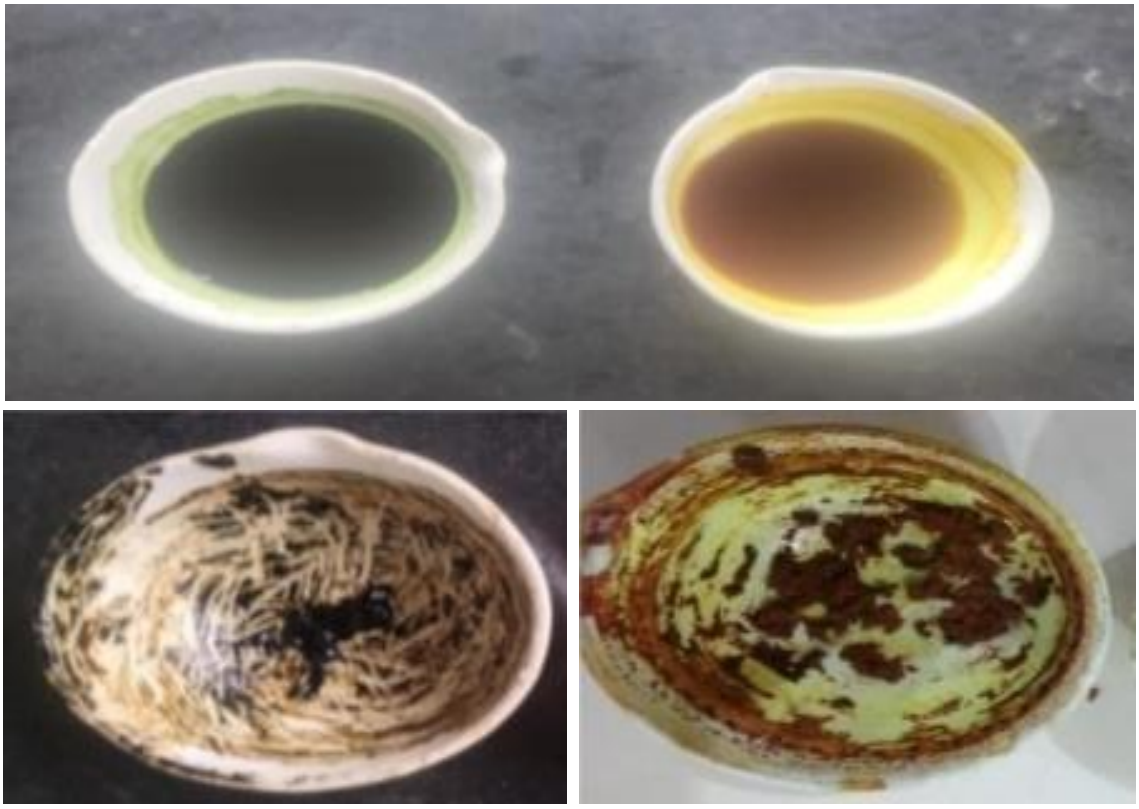

Fig. 2: Crude extract of Tulsi and Mango ginger

Formulation of Ointment

Table 1:- Formation of ointment bases

Sr. No.	Name of Ingredients	Quantity to be taken
1	Woolfat	0.5gm
2	Cetostearyl alcohol	0.5gm
3	Hard paraffin	0.5gm
4	Yellowsoft paraffin	8.5gm

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Table 2:- Final prepared formulation of ointment

Sr. No.	Name of Ingredients	Quantity to be taken
1	Prepared Tulsi Extract	0.12gm
2	Prepared Mango ginger Extract	0.12gm
3	Ointment Base q.s	10gm

Procedure for preparation of Herbal Ointment

Initially ointment base was prepared by weighing accurately grated hard paraffin which was placed in evaporating dish on water bath. After melting of hard paraffin remaining ingradients were added and stirred gently to aid melting and mixing homogeneously followed by cooling of ointment base. The number of ingredients taken for the preparation of the ointment base was mentioned in table no.1. Herbal ointment was prepared by mixing accurately weighed tulsi and mango ginger extract to the ointment base by levigation method to prepare a smooth paste with 2 or 3 times its weight of base, gradually incorporating more base until to form homogeneous ointment, finally transferred in a suitable container. The evaluated final prepared formulation was given in table no.2

Evaluation of Ointment

1) The final ointment was evaluated by various parameters such as color, odor, consistency, ph, spreadability, extrudability, diffusionstudy, lod, solubility, washability, non-irritancy test,and stability study .

2) colour evaluation:- colour evaluation has been tested by visible examination by using a black and white background and any change has been observed for change in colour.

3) Odour evaluation:- odour of the ointment has been tested with the three volunteers for more accurate observation.

4) consistency evaluation:- the prepared ointment was found to be smooth and no greediness is observed.

5) Ph evaluation:- about 2 gm of the ointment was taken in a beaker followed by 100 ml of distilled water, resulting solutions were heated up to 70°c.the ph of ointments is determined using a digital ph meter.and the readings were recorded in triplicate.

6) spreadability evaluation:- the spreadability was determined by placing an excess sample in between two slides which were compressed to uniform thickness by placing a definite weightfor a definite time. The time required to separate the two slides was measured as spreadability.lesser the time taken for separation of two slides results better spreadability. Spreadability was calculated by the following formula $s=m\times l/t$

Where, s= spreadability

M= weight tide to

The upper slide l= length of glass slide

T= time taken to separate the slides

7) Extrudability evaluation:- the formulation was filled in collapsible tube container. The extrudability was determinedinterms ofweight of ointmentrequired toextrude0.5cm oftape of ointment in 10 seconds.the excrudability of ointment formulation was calculated by using following formula

8) Extrudability =amount of ointment extruded from the tube x100/total amount of ointment filled in the tube

9) Diffusion study:-adiffusion test was performed by preparing an agar nutrient medium. There was a plate with a hole in the middle of the medium, in which the ointment was placed. The time required for the ointment to spread was recorded after 1 hour.

10) Lod evaluation:- loss ondrying (lod) was determined by placing the formulation in a petri-dish ina water bath and drying it at the temperature of 105°c.

11) Solubility evaluation:- soluble in boiling water, miscible with alcohol, ether, chloroform.

12) Washability:- formulation was applied on the skin and then ease extend of washing with water was checked.

13) Non irritancy test:- herbal ointment prepared was applied to the skin of human being and observed for the effect.

14) Stability study:- physical stability test of the herbalointment was carried outforfour weeks at various temperature conditions like 20°c, 25°c and 37°c. The herbal ointment was found to be physically stable at

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different temperature i.e. 20°c, 25°c, 37°c within four weeks. The levigation method used to prepare smooth paste of ointment which was stable during the storage.the physicochemical properties were studied that shows satisfactory results for spreadability, extrudability, washability, solubility, loss on drying, stability and others. There was no changes observed in spreading ability, diffusion study as well as irritant effect.

Physicochemical evaluation of formulated ointment:

Table 3: Physicochemical evaluation of formulated ointment

Sr. No.	Physicochemical parameters	Observation
1	Colour	Olive green
2	Odour	Characteristics
3	Consistency	Smooth
4	pH	5.5
5	Spreadability	24 sec
6	Excrudability	0.3gm
7	Diffusion study (after 60min)	0.8cm
8	Loss on drying	20 %
9	Solubility	Soluble in boiling water, miscible with alcohol, ether, chloroform
10	Washability	Good
11	Non irritatancy	Non irritant
12	Stability study (20°c, 25°c, 37°c	Stable

Antimicrobial Test

The antibacterial activity is estimated by comparing the inhibition of growth of sensitive micro- organisms produced by known concentration of the isolated substance or extract or synthetic compound to be examined against a reference substance.

1. Method of analysis:

Two generalmethod usually employed;one is the cup-platemethod [agar welldiffusion method)-the agar cup plate method depends upon diffusion of the antibiotic from a vertical agar [cup] cylinder through a solidified agarlayer on a petri dish. Sterileagaris inoculated by suspension of the microbial inoculum. Then a hole with din deter of 6 to 8 mm is punched aseptically with a sterile cork borer or a tip, and then of the antimicrobial solution at desired concentrationis introduced into thewell. Then, agar plates are incubated under suitable conditions depending upon the test microorganism. The antimicrobial agent diffuses in the agar medium and inhibits the growth of the microbial strain entirely in a zone around the cylinder containing a solution of the substance to be tested.

2. Preparation of the sample solution

Weigh 5.00 mg /10 mg of each sample and dissolve/dilute with 5 ml dimethyl sulphoxide (dmso)involumetric flask i.e. 1mg/ml solution concentration.vortex for 1-2 min to effect the dissolution use directly 100 µl to inoculate.

3. Preparation of Test organism and Suspension:

Test organisms

1) Staphylococcus aureus Slant ATCC no.6538
2) Escheriachia coli ATCC no. 8739

Stock culture: Staphylococcus aureus ATCC no.6538.

Streak a loopful of Staphylococcus aureus ATCCno.6538 on,two slants Of pre incubated Nutrient agar. Incubate the slants at 30-35°C for 24 Hours in an incubator

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Stock culture: Escheriachia coli ATCC no. 8739

Streak a loopful of suspension atcc. 8739 on two slants of pre incubated nutrient agar. Incubate the slants at 30-35°c for 24 hours in an incubator after incubation pick up the growth from incubated slant and inoculate in 3 ml of saline solution and vortex to prepare the uniform suspension.adjust o.d. of culture to approx. 60-70 % od at 530 nm using sterile saline and calorimeter. After adjusting o.d. store the test organism in refrigeration at 2-80c note: approximately viable countis 10°to 10 cfu/ml against 60-70 % od at 530 nm

Plate Preparation for analysis:

After the suspension is prepared, use each 2 ml of culture suspension of s. Aureus and candida albicans is to inoculate separately in 200 ml of sterile molten and cooled medium at 40°c – 45°c antibiotic assay medium no. 19. 15-20 ml of sterilized agar medium is poured into a sterile petri plate with the help of sterile measuring cylinder give a depth of 3 to 4 mm. Allowto cool atroom temperature by placing the dishes or plates on a level surface. Keep plates inrefrigeratorfor 15 to20 minute for hardening. Ensure that the layers of medium are uniform in thickness. Make 4-5 agar cups on each plate using 8-10 mm ss borer. Label the plates for sample, standard and negative control samples and analysis details.

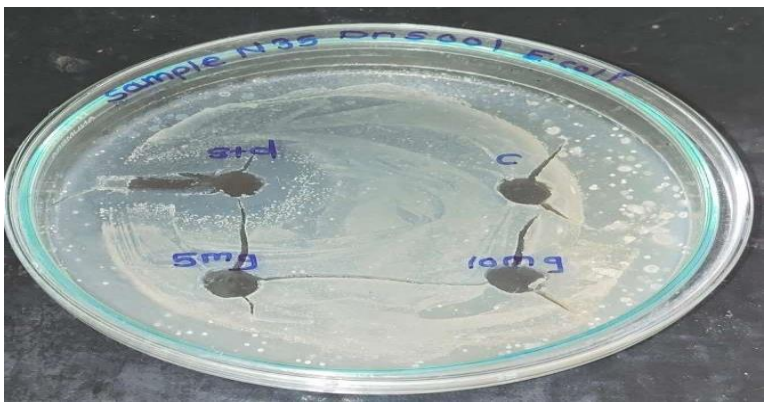
Analysis:

The volume of solution added to each cylinder or cavity must be uniform and sufficient almost to fillthe holes when these are used. Add 100 µl 1mg/ml solutiona to agar cup labeled as std. Add 100 µl img/ml = solution b to agar cup labeled for each compound id labeled on plate.add 100 µldimethyl sulphoxide (dmso)to agar cup labeled as n (negative). Leave the dishes or plates standing for 15-20 min. At 2-8°c or as appropriate, as a period of pre- incubation diffusion to minimize the effects of variation in time between the applications of the different solutions. Incubate them for about 24- 48 hours at the temperature 30-35°c for bacteria and 20-25°c for yeast and mould. After completion of incubation accurately measure the diameters or areas of the circular inhibition zones and record the results.

Observations:

Dose of compound:5 mg/ml 10 mg/ml	Control: DMSO Dose of standard:1 mg /ml

Staphylococcus aureus Slant ATCC no.6538



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Escheriachia coli ATCC no.8739

Sr. No.	Sample	Concentration	Zone of inhibition (mm) S. aureus	Zone of inhibition (mm) Escheriachia coli
1	Control			
2	Standard Streptomycin	1mg/ml	30	22
3	Sample N35	5mg/ml	01	01
		10mg/ml	10	02

III. RESULT AND DISCUSSION

The present study was done to prepare and evaluate the herbal ointment. The herbal extracts were prepared by using simple maceration process to obtain a good yield of extract and there was no any harm to the chemical constituents and their activity. And the herbal ointment shows the inhibiting growth of microorganisms against S.aureus and Escheriachia coli.

IV. CONCLUSION

From the ancient times the mango ginger and tulsi is naturally occurring medicinal plants is used for their various medicinal activities and properties like antibacterial, antifungal, antifungal, antioxidants, anti-inflammatory and wounds healing . Also used an anti- carciogenic properties that prevents the certain types of cancer. Thus this ointment could become a media to use these medicinal properties effectively and easily as a simple dosage form.

V. REFERENCE

[1] Rajasree PH, Vishwanad V, Cherian M, Eldhose J, Singh R. Formulation nd evaluation of antiseptic polyherbal ointment. International Journal of Pharmacy and life sciences 2012;3(10):2021-31

[2] R. Chandrasekar*, B. Sivagami Formulation and Evaluation of a Poly Herbal Skin Care Cream containing Neem and Tulsi Research J. Topical and Cosmetic Sci. 9(1):January – June 2018 : 25-32

[3] Himal Paudel Chhetri*, Nisha Shrestha Yogol, Jyoti Sherchan, Anupa K.C., S. Mansoor, Panna Thapa. "Formulation and Evaluation of antimicrobial herbal ointment",

[4] "Kathmandu University Journal of Science, engineering and Technology vol. 6, no. I, march, 2010, pp 102-107

[5] Dr. Sakthivel M, Dr. Mohamed Halith S, KarthikeyanR, Kaviya M, Kiruthika M, Kowsalya of S, Krishnapriya R."Formulation and Evaluation of Herbal Ointment Containing Neem and Turmeric Extract"Int. J.Pharm.Sci.Rev.Res.,78(2), January – February 2023; Article No. 21, Pages: 134-139

[6] Shubhangi E. Sawant*, MonaliD. Tajane"Formulation and Evaluation of herbal ointment containing Neem and Turmeric Extract", Journal of Scientific and Innovative Research 2016; 5(4): 149-151

[7] Shubhangi E. Sawant, MonaliD. Tajane, Formulation and Evaluation of herbal ointment containing Neem and Turmeric extract, Journal of Scientifics and Innovative Research 2016; 5(4): 149-151.

[8] PandeyA, Jagtap JV,PatilAA, JoshiRN, Kuchekar BS. Formulation And Evaluation of anti-bacterial and anti-fungal activity of herbal Ointment containing Aloe vera, Azadirachta indica and Curcuma Longa. Journal of Chemical and Pharmaceutical Research 2010;2(3):182-86.

[9] KokateC.K.,GokhaleS.B.,PurohitA.P.A textbook Pharmacognosy, Nirali Prakashan 34 Th edi. Sept 2013, 9.117

[10] Chopra,A.,Doiphode, V.V.(2002).Ayurvedicmedicine:Core concept, Therapeutic principles, and current relevance. Medical Clinics of North America, 86(1), 75