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Formulation and Evaluation of Herbal Ointment of *Blumea lacera*

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ABSTRACT

Blumea lacera of family *Asteraceae* is a common Rabi weed all over India. Its annual herb is with the strong odor of turpentine. This plant is commonly known as Buradi in India. Indiginously in Indian system of traditional medicine it is Aromatic, astringent, Stomachic, Anti-Spasmodic and Diuretic. It is useful in treatment of Fever, Burning, Wound Healing, Abdominal disorder, inflammation. It also advised in dysentery and in vaginal bleeding. The present research has been undertaken with the aim to formulate and evaluate herbal ointment because synthetic may cause the adverse effect on skin. The herbal ointment was formulated by extracting *Blumea lacera* (*brum.f.*)DC.

Keywords: *Asteraceae*, *Blumea lacera*, Traditional medicine.

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INTRODUCTION

Herbal drugs are formulated in the form of ointment and are used topically for several purposes, e.g. as protectants, antiseptics, emollients, antipruritic, keratolytics and astringents. Ointment bases are always anhydrous and generally contain one or more medicaments in suspension or solution or dispersion. Ointment bases may be hydrocarbon (oleaginous), absorption, water removable and water soluble type. On the basis of their level of action, they are classified as: epidermatic, endodermatic and diadermatic a wound healing ointment is aimed to heal the incised and excised wounds. In an earlier study, medicinal plants have been reported to be very beneficial in wound care, promoting the rate of wound healing with minimal pain, discomfort, and scarring to the patient.^{1,2}

The use of natural products or natural product-based medicine is increasing all over the world, especially in the developing countries, even though synthetic drugs are readily available and highly effective in curing various diseases, there are people who still prefer using traditional folk medicines because of their less harmful effects. Approximately 25% of the prescribed drugs in the world are of basically plant origin. In the developing countries like India, approximately 80% people rely on traditional plant-based drugs for their primary health-care needs. Recent widespread interest in plant-derived drugs reflects its recognition of the validity of many traditional claims regarding the values of natural products in health care. For quality control of traditional medicines, phytochemicals investigations are mainly applied. Thus, it makes a great significance to investigate chemical constituents and study pharmacological activity on this plant for its medicinal uses, which will be very useful in the field of medicine as new emerging drug. According to the WHO, medicinal plants are the best sources to obtain a variety of new herbal drug.^{3,4,5}

Blumea lacera one of the Rabi weed of India of family *Asteraceae* is one of the Rabi weed of India this plant is commonly known as Buradi in India. Its annual herb is with the strong odor of turpentine.⁶

Kingdom	:	Plantae.
Sub-kingdom	:	Tracheobionta.
Division	:	Magnoliophyta.
Class	:	Magnoliopsida.
Sub class	:	Asteriadae.
Order	:	Asterales.
Family	:	<i>Asteraceae</i> .
Genus	:	<i>Blumea</i> .
Species	:	<i>lacera</i> .

- It is an annual herb, 25-80 cm tall with strong odor of turpentine. Its stem is erect, herbaceous, grooved, ash colored, densely granular-pubescent.^{1,2}
- Leaves are simple, alternate, 3-8*2.5 cm, obviate-oblong, incised or sometimes lyrate lobed, silky pubescent on both sides, margins serrate-dentate.^{1,2}
- Head is short axillaries cymes and terminal spiciformpanicles, yellow. Heads heterogamous, 0.4-0.6cm across; involucre bracts, 0.3-0.4cm long, slightly longer than corolla.^{1,2}
- Flowers are outer ray florets unisexual, female; inner disc florets bisexual. Petals 5, gamopetalous, regular. Stamens 5, syngenesious, epipetalous. Carpels 2, syncarpous, ovary inferior, 1-celled, 1-ovuled and its flowering time are January to April.^{1,2}
- Fruits are Achenes, oblong, sparsely hairy, subangulate, terete, Pappus white.^{1,2}
- It is used Indigenously in Indian system of traditional medicine as Aromatic, astringent, Stomachic, Anti-Spasmodic and Diuretic. It is useful in treatment of Fever, Burning, Wound Healing, Abdominal disorder, inflammation. It also advised in dysentery and chronic uterine discharge. The tincture is useful in case of bleeding piles in vaginal bleeding.^{1,2}
- A root of it kept in the mouth is said to be used to cure disease of mouth.^{1,2}



Blumea lacera leaves



Blumea lacera roots



Blumea lacera plant

METHOD

The whole plant was collected from Dist. Nashik (Igatpuri) during the month of December, the plant material was identified and authenticated by Dr. Wankhede, Head of SMBT Ayurveda College and Hospital. The collected material was cleaned thoroughly, dried in air and grinded mechanically in grinder. The powder obtained after grinding was then passes from the sieve and stored in air tight container for the further use.

Then the air dried powder was further used to obtain the ethanolic extract by the cold maceration process. 100g of powder with 500ml of ethanol was kept for 7 days with frequent stirring, after 7 days the mass was passed for filtration and the ethanolic extract was separated.^{8,9}

The extract and the nano extract separately were incorporated into the molten simple ointment base and allowed to congeal by stirring. After the ointment was formulated, they were packed in separately.^{10,11}

Ethanolic Exact of *Blumea lacera* collected and use as active Ingredient for formulation which is done by using ointment base. The formulation at laboratory scale was done. The ointment was formulated by changing the ratio of extract. Various formulation (F1, F2, F3, F4) were developed by using a suitable ratio of extract. The formulation was evaluated for number of parameters such as pH, viscosity, spread ability, wash ability, stability testing were evaluated.

Thin Layer Chromatography (TLC):

TLC studies were carried out for the better identification of different components of the ethanolic extract of *Blumea lacera*. The results of TLC shows the presence of spots in the solvent system- Chloroform: Benzene: Formic acid (3:1:12drops).

TLC Parameters:

- Sample preparation: Ethanolic Extract with Water
- Sample application: Micropipette
- Solvent system: Chloroform: Benzene: Formic acid (3:1:12)
- TLC plate development: Silica Gel G.
- R_f value: F1- 0.60 cm, F2- 0.80, F3- 0.70, F4-0.65

Evaluation of Formulations:

Prepared *Blumea lacera* ointment formulations were evaluated for the following parameters.

Organoleptic Parameters:

Blumea lacera ointment formulations were evaluated based on their appearance, texture and consistency. Texture was determined on the basis of grittiness / smoothness. Texture was found to be smooth; it can be spreadable and washable easily.^{12,13}

pH:

2.5 gm *Blumea lacera* ointment formulations sample of each batch was taken in 100 ml dry beaker, 50 ml water was added to it. Beaker was heated on water bath maintained at about 60°C to 70°C for 10 minutes, cooled to room temperature, and then centrifuged at 3000 rpm for 10 minutes. The pH of water extract was measured by using pH meter. The pH measurements were done by using a digital type pH meter by dipping the glass electrode into the ointment formulation.^{12,13}

Spreadability:

The spreadability is expressed in terms of time in seconds taken by two slides to slip off from ointment, placed in between two slides under the direction of certain load. Lesser the time taken for separation of two slides, better the spreadability of ointment.

Spreadability of *Blumea lacera* ointment formulations was determined by using the formula-

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

Where S = spreadability, M = Weight tied to upper slide, L = Length of glass slides and T = Time taken to separate the slides.^{12,13}

Viscosity:

The measurement of viscosity of prepared ointments was carried out with Brookfield viscometer. The values of each *Blumea lacera* ointment formulation were done in triplicate.^{12,13}

Extrudability:

Extrudability test is the measure of the force required to extrude the material from a collapsible tube when certain amount of force has been applied on it in the form of weight. In the present study the quantity in percentage of ointment extruded from the tube on application of certain load was determined. The Extrudability of prepared *Blumea lacera* ointment formulations was calculated by using following formula. Ext. = Amount of ointment extruded from the tube x 100 Total amount of ointment filled in the tube.^{12,13}

Loss on drying:

The loss in weight, in the sample so tested, principally is due to loss of water and small amount of other volatile material from it. Loss on drying was determined by placing the 1gm of *Blumea lacera* ointment formulations of different batches in a petri dish on a water bath and dried until constant weight was obtained.^{12,13}

Centrifugation:

It is believed to be a unique tool for the evaluation of accelerated deterioration of ointments. It was determined by using centrifuge in 10 ml-graduated cylinder at 10,000 rpm for 10 min.^{12,13}

Washability:

Blumea lacera ointment formulations were applied on the skin and then ease extend of washing with water was checked. Washability was checked by keeping applied skin area under the tap water for about 10 min.^{12,13}

Stability study:

Blumea lacera ointment formulations were evaluated for their stability at an ambient condition of pressure and temperature for two weeks. Formulations were observed for phase separation and particle agglomeration.^{12,13}

Table 1: Evaluation Results of Formulation

Evaluation Parameter	I	II	III
Color	Light Green	Light Green	Dark Green
Consistency	Homogenous, free from lumps	Homogenous, free from lumps	Homogenous, free from lumps
pH (1% w/v solution)	6.90	6.75	6.80
Viscosity (centipoises)	13400	13100	12600
Spread ability (gm.cm/ sec)	12	12	15
Extrudability study (g)	180	200	170

Antimicrobial Activity:

Compound shows good antimicrobial activity against gram –ve and gram +ve bacteria as compared with standard Gentamicin. The zones of inhibition of poly herbal formulations were in between 23-28 mm which can be comparable with standard formulation 24-29 mm (Table 2). The antibacterial activity could be due to different classes of compounds present in leaves extracts, such as alkaloids, flavonoids, phenols and tannins. The use of semisolid formulations can increase the residence time of drugs on the skin and consequently enhance bioavailability. Poly-herbal ointments prepared by incorporating ethanolic extracts of leaves were effective can be used as antibacterial agent for the treatment of wounds and burns.^{12,13}

Table 2: Antimicrobial Activity

Sr. No.	Formulations	Minimum Inhibitory Zone (mm)		
		<i>S. aureus</i>	<i>E. coli</i>	<i>P. aeruginosa</i>
1	Formulation I	28-31	25-28	27-30
2	Formulation II	25-28	24-28	24-27
3	Formulation III	25-27	24-26	23-26
4	Formulation IV	26-29	22-25	24-27
Standard	Gentamicin	26-29	24-27	25-29

RESULTS AND DISCUSSION:

Topical route of application has a great potential of effective and safe way to administer in the form of ointment. Ointment prepared from the extract of *Blumea lacera* passes all the physical evaluation parameters. The above finding justifies the wound healing properties of *Blumea lacera* as suggested

in the traditional literature. Further investigation is necessary to determine the bioactive constituents present in the extract used for studies.

CONCLUSION:

It can be conclude that as per above results of formulated *Blumea lacera* will showing good antimicrobial activity while as per evaluations F2 formulation showing good results as compare to other formulation.

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