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FORMULATION AND EVALUATION OF HERBAL OINTMENT BY USING DYEROPHYTUM INDICUM EXTRACT

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ABSTRACT

Dyerophytum indicum belong to the family Phumbaginaceae is a small herb well known for its medicinal properties and widely used as worldwide. It possoses wide range of phytochemicals showing various pharmacological activities. *Dyerophytum indicum* is an important plant used in the treatment of arthritis, tooth ache, leprosy, anaemia, and stimulate the power of digestion and metabolism. **Method:** The extract was obtained by the maceration method with 90% ethanol. simple ointment IP was use as ointment base for dispersion of the plant extract parameter investigated includes spreadability, pH and viscosity of extract. **Result:** Dry leave of part of plant powder and extract by maceration technique of extraction with ethanol. The pH of ointment was 6.06 ± 6.10 and the spreadability was 45 ± 48mm slightly washable and non irritant viscous in natue, insoluble in water, soluble in ether and chloroform, no pink colour from the rancidity test are passed and loss on drying is passed. **Conclusion:** *Dyerophytum indicum* ethanol extract has a good therapeutic value for combating tropical infection disease. The D*yerophytum indicum* ointment is used as a potential agent for treatment of skin infection.

KEYWORDS: Maceration, *Dyerophytum indicum*, spreadability, Herbal ointment.

INTRODUCTION

In nineteen century the term Materia Medica was use of the subject now known as Pharmacognosy. While studying Sarsaparilla it was Seydler a German scientist who coined the term Pharmacognosy in 1815 in the title of his work Analecta Pharmacognostica.

Pharmacognosy is derived from two Greek words viz. Pharmacon(a drug) and Gignosco(to acquire the knowledge of).[1] Ayurveda (literal meaning -science of life) provides medicine to large section of our population. World Health Organisation is actively encouraging developing countries to use herbal medicines which they have been traditionally used for centuries. Herbal renaissance is happening all over the world. Herbal products are safe in contrast to allopathic synthetic drugs. It was believed that this system deals with body and the spirit. Lord Brahma originated the concept of Ayurveda, who is known as the creator of the world. The wellknown treaties are Charak Samhita and Sushruta Samhita. Rigveda and Atharvaveda. These are the oldest written texts on Ayurveda. The Atharvaveda entitled 8 divisions of Ayurveda: Surgery, science of fertility, internal medicine, pediatrics, surgery for head and neck, psychiatry, ophthalmology and toxicology, whereas Sushruta Samhita explains the process of skilled surgery.[2]

Herb" it consist of entire plant or any part of the plant."Herbal Drug" These consist of plant or any part of plant, usually in unprocessed or crude forms (crude drugs) which have medicinal value."Herbal Drug Preparation" They are processed form of herb. They are derived from herbal drugs by various techniques like extraction, fractionalization, purification, concentration, fermentation and may be the form of powder, extracts, tincture, fixed oil volatile oil, resin gum etc.[3]

Ointment: Ointment is semisolid preparation use for topical application to the skin or mucous membrane .It topically consists of a combination of medicinal substance dissolved or dispersed in suitable base.

Dyerophytum indicum (Gibs. Ex Wt.) Kuntze Classification[2]

Botanical name : *Dyerophytum indicum*
Hindi name : Ratochitrak, Chhitral, Chitawal
Common name : Mellah (Arabic name)
Part used : Whole plant

➢ **Bacterial Skin Infections**

Bacterial skin infections occur when bacteria enter the skin, either from an outside source or because they are present on the skin. They can enter the skin through a hair follicle or after a wound. Bacterial infections can be systemic or local. Systemic infections can cause symptoms throughout the whole body, such as a fever, while local infections only affect a specific area. Some bacterial infections can begin in one area and spread throughout the body. Some bacterial skin infections, such as impetigo, can spread between people through direct skin contact or with bodily fluids, contaminated food or water, or by touching surfaces where bacteria are present. Others, such as cellulitis, are not contagious.[4]

What are the symptoms of a skin infection?

- redness on pales skin, or purple or darker areas of skin if you have a darker skin tone
- lesions that may be flat or raised, bumpy, wart-like, and so on
- itching
- pain and tenderness
- In some cases, a person may also have other symptoms, such as a fever.

Signs of a severe infection include

- pus
- blisters
- skin sloughing, breakdown
- dark areas that can indicate necrosis or tissue death
- pain and discoloration
- widespread swelling

Evaluation parameter of ointment

- Spread ability Test
- Wash ability Test

PREPARATION OF OINTMENT

Formula for simple Ointment

Table No. :- 2.

Sr. No.	Ingredients	Std. Formula	Working Formula	F1	F2
1.	Wool Fat	10.0 gm	1.0 gm	1.0 gm	1.0 gm
2.	Cetostearyl Alcohol	10.0 gm	1.0 gm	1.0 gm	1.0 gm
3.	Hard Paraffin	10.0 gm	1.0 gm	1.0 gm	1.0 gm
4.	Soft Paraffin	60.0 gm	16.0 gm	16.5gm	16.0 gm
5.	Extract	10.0 gm	1.0 gm	0.5gm	1.0 gm

- Irritancy Test
- Identification Test of Ointment
- Color, Odour, Consistency
- Viscosity
- Rancidity
- Identification test of pH
- Loss of drying
- Antimicrobial test

MATERIAL AND METHODS

Chemical and Reagent

The various chemicals used through experimental work are summarized.

Table No. :-1.

Sr.No.	Chemicals
1.	*Dyerophytum Indicum*
2.	Ethanol
3.	Wool Fat
4.	Cetostearyl Alcohol
5.	Hard Paraffin
6.	Soft Paraffin

Collection of Herbal Plant

The Powder of D*yerophytum Indicum* Purchased from online market. This Powder material used for the further work.

EXTRACTION

Maceration Method

The extract was obtained by the maceration process. 50gm powder was imbibed with 500ml of 90% ethanol for maceration for 7 days with stirring. finally ethanolic extract was collected and concentrate to get blackish residue. extract was stored in the airtight container at cool and dark place.

Procedure

Procedure for Preparation of herbal Ointment

a) Initially prepare the ointment base by weighing accurately grated hard paraffin which is to be place in evaporating dish on water bath. After melting of hard paraffin add remaining ingredients and stir gently to aid melting and mixing homogeneously followed by cooling of ointment base.
b) Prepare the herbal ointment by mixing accurately weighed *Dyerophytum indicum* 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.

EVALUATION TEST

Spreadability test

Excess sample was placed between the two glass slides and 100 g weight was placed on the glass slide for 5 min to compress the sample to a uniform thickness. Weight (100 g) was added to the pan. The time in seconds required to separate the two slides was taken as a measure of spreadability. Spreadability = 100gm 2.5cm/5. Spreadability was calculated by following formula

$S = M \times L / T$

Where
S= Spreadability
M= Weight tide to upper side
L= Length of glass slides
T= Time taken to separate the slides
It was found to 5 seconds.

Washability Test

Washability was determined by rubbing the little amount of base on hand for test.

Irritancy Test

Small quantity of ointment applied on skin and wait for 10 minutes after 10 minutes we evaluate that ointment properties on skin.

Identification test Ointment

a. Colour b. Odour c. Consistency

Test of solubility

The contents should be soluble in 9 parts of water and in 1.7 parts of hot water. The contents should be miscible with alcohol, ether and chloroform.

Viscosity

Viscosity of ointment was measured by the Brookfield viscometer. The correct spindle was selected (spindle no. 4) for the given product then the operating condition was setup. Then the viscosity was measured directly at 6rpm speed by keeping the torque constant. The mean was obtained. The viscosity is determined by following formula: Viscosity = Dial Reading × Factor, For. I.V-4 at 6 RPM Factor is 1M (1000)

Identification test of pH

To find out the pH of D*yerophytum indicum* ointment, in practical bases, the electrode can dip in the solution of *Dyerophytum indicum*. The solution was prepared by One gram of the weighed formulation was dispersed in 100 mL of diluted tween 80 (polysorbate 80).

Rancidity

This test is performed by using the Phloroglucinol solution. The rancidity is due to the oxidation of the fats and oils; during oxidation free fatty ultsare shown acids are liberated. These free fatty acids react with the Phloroglucinol solution and gives pink colour. This indicates the rancidity of the product.10 ml of melted ointment was taken then added 10 ml of concentrated hydrochloric acid and 10 ml of Phloroglucinol solution and shaken for one minute. The material shall be taken to have passed the test if no pink colour developed.

Loss on draying

Procedure

1) Weigh about 1.5 g of the powdered drug into a weighed flat and thin porcelain dish.
2) Dry in the oven at 100° c or 105° c, until two consecutive weighings do not differ by more than 0.5 mg.
3) Cool in a desiccators and weigh. The loss in weight is usually recorded as moisture.

Antimicrobial Activity

Procedure

1) Prepare nutrients agar medium and sterilize by autoclave at 121°c for 15 minutes.
2) Prepare the agar plate and lable with the name of microorganisms inoculated using sterile technique inoculated agar plate with their respective test microorganisms by swab streak method or spread plate method.
3) Allow all culture plate to dry about smin using sensi-disc dispenser apply the antibiotics disc by placing dispenser over the agar surface.
4) If dispenser are not available distribute the individual disc at equal distance with sterile forceps.
5) Gently press each disc down with wooden end of cotton swap or sterile forecep. that the disc adhere to surface of agar the agar.
6) Incubate all plate in inverted position at 37° for 24-48 hr.

RESULT AND DISCUSSION

The present study was done to prepare and evaluate the herbal ointment. For this 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.

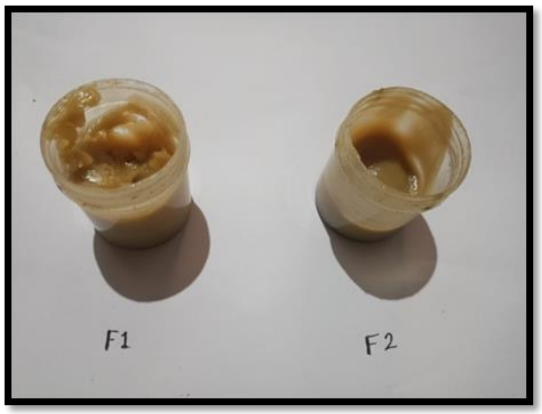
The levigation method was used to prepare ointment so that uniform mixing of the herbal extract with the ointment base was occurred which was stable during the storage.

Table No. :- 3

Evaluation Parameter	**Observation**	
	F1	**F2**
Colour	Light Yellow	Yellow
Odour	Aromatic	Aromatic
Consistency	Viscous	Viscous
pH	6.06	6.10
Spreadability	48mm	50mm
Loss on drying	38%	25%
Solubility	Soluble in ether and chloroform	Soluble in ether and chloroform
	Insoluble in water	Insoluble in water
Washability	Slightly washable and sticky	Slightly washable and sticky
Non irritancy	Non irritant	Non irritant
Viscosity	41cps	37 cps
Rancidity	No pink colour	No pink colour
Antibacterial Activity	**Zone of inhibition**	
Std. (Ampicillin) 12 mm	8.2 mm (E. Coli)	8.6 mm (E. Coli)
Std. (Ampicillin) 14 mm	10.0 mm (S. aureus)	10.2 mm (S. aureus)

Evaluation Parameter of Herbal Ointment

In the evaluation parameter of herbal ointment, we perform different types of evaluation tests of ointment.



CONCLUSION

From the study it can be conduct that prepare ointment using *Dyerophytum indicum* is suitable for treat or prevent skin infection and so better alternative other than allopathic ointment. Hence reduce the side effect and skin dryness of human skin. *Dyerophytum indicum* has good antimicrobial properties and use for the treatment of skin infection cause by susceptible organism.

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