

FORMULATION AND EVALUATION OF POLYHERBAL OINTMENT

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ABSTRACT

Herbal ointment containing hydroalcoholic extract of plants- *psoralea corylifolia* , *Achryanthes aspera*, was formulated as ointment and the hydroalcoholic extract was prepared by maceration method and the extract was incorporated into 10gm of simple ointment base by melting and trituration to give ointment . These formulations were evaluated for the following parameters: pH, spreadability, grittiness, skin irritation study, stability.

Keywords: Herbal ointment. Bavanchi ; *psoralea corylifolia*, Aghada ; *Achryanthes aspera* ; *Neem* ; *Turmeric* ; Physical Parameters ; Phytochemicals

INTRODUCTION

Recently there has been a shift in universal trend from synthetic to herbal medicine, which we can say 'Return to Nature'. Medicinal plants have been known for millennia and are highly esteemed all over the world as a rich source of therapeutic agents for the prevention of diseases and ailments. Nature has bestowed our country with an enormous wealth of medicinal plants; therefore, India has been referred to as the medicinal garden of the world. The other main source of medicinal plants is from cultivation. The cultivated material is definitely more appropriate for use in the production of drugs.^[1] Along with other dosage forms of herbal drugs are also available in the form of ointment which is semisolid preparation used topically for several purpose eg. as protectants ,antiseptic, antihealing, emollient, kera-

tolytic and astringents.^[2] Bavachi consists of leaves of *psoralea corylifolia* familyfabaceae. Bavachi leaves is p. *corylifolia* or Bu GuZhi in traditional chinese medicine is an herb used to tonify the kidneys, particularly kidney yong and essence. It is used for helping the healing of bone fractures, for lower back and knee pain, impotence, bed wetting, hair loss and vitiligo.^[3] Aghada consists of dried leaves of *Achryanthes aspera* Family- Amarantaceae. Aghada has diuretic, expectorant and purgative properties. The juice of its leaves is used in fever, cough, diarrhea, dysentery, dropsy and other disease. Decoction prepared using the herb is used in stomach ache and bowel complaints, piles, boils, skin eruption ,^[4] etc.



1. Bavanchi^[3] -

Synonyms- Cullen Corylifolium -Lotodes Corylifoli

B.S.-It is obtained from dried leaves of *Psoralea Corylifolia*

Family- Fabaceae

Chemical Constituents -

Flavonoids(Neobavaisoflavone, Isobavachalcone, Bavachalcone, Bavachinin, Bavachin, Corylin, Corylifol, Corylifolin and 6-Prenylnaringenin)

-Coumarins (Psoralidin, Psoralen, Isopsoralen and Angelicin)

-Meroterpenes (Bakuchiol and 3-Hydroxybakuchiol)-Very high concentration of Genistein



2. Aghada ^[3]

Synonyms- Apamarg , Aghata , Onga , Apang Madhogantha

B.S.-It is obtained from dried leaves of *Achryanthes Aspera*

Family- Amarantaceae

Chemical constituent-Triterpenoids Saponins , Oleoic Acid (Aglycone , Ecdysterone), Hormones , Long Chain Alcohol, Achryanthine , Betaine , Pentatriacontane, Hexatriacontane, Tritriacontane .

MATERIALS AND METHOD

Collection of plant material : Leaves of plants were collected from the local area of Pune.

Preparation of extract : Leaves of the plant were collected and washed thoroughly with distilled water and shade dried for 10 days. Dried leaves were grind into powder form. 20 gm powder was imbibed with 350ml of 90% ethanol for 3hrs. and transferred to percolator with addition of 150ml of 90% ethanol for maceration for 7 days with occasional stirring. Finally

ethanolic 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 extract : Dried leaves of turmeric were grind and the powder obtained was followed for extraction same as that for bavanchi leaves extract. The extract with blackish green colour was obtained and stored at cool and dark place in air tight container.^[5]

Formulation of ointment

Table 1: Formulation of ointment base

Sr.no	Name of Ingradient	Quantity to be taken
1.	Wool fat	0.5gm
2.	Cetostearyl alcohol	0.5gm
3.	Hard paraffine	0.5gm
4.	Yellow soft paraffin	8.5gm

Table 2: Formulation of herbal ointment

Sr.no	Name of Ingradient	Quantity to be taken
1.	Prepared extract sample 1	0.03gm
2.	Prepared extract sample 2	0.03gm
3.	Prepared extract sample 3	0.03gm
4.	Prepared extract sample 4	0.03gm
5.	Prepared extract sample 5	0.03gm
6.	Ointment base q.s.	10gm

Procedure for preparation of herbal ointment :

(a) 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 ingredients were added and stirred gently to aid melting and mixing homogeneously followed by cooling of ointment base.

(b) Herbal ointment was prepared by mixing accurately weighed Neem and Turmeric 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.

Evaluation¹⁷¹ :

Colour and Odour - Physical parameters like colour and odour were examined by visual examination.

Consistency - Smooth and no greediness is observed.

pH - pH of prepared herbal ointment was measured by using digital pH meter. The solution of ointment was prepared by using 100ml of distilled water and set aside for 2hrs. pH was determined in triplicate for the solution and average value was calculated.

Spreadability:The spreadability was determined by placing excess of sample in between two slides which was compressed to uniform thickness by placing a definite weight for 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 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

Extrudability - The formulation was filled in collapsible tube container. The extrudability was determined in terms of weight of ointment required to extrude 0.5cm of ribbon of ointment in 10 seconds.

Diffusion study : The diffusion study was carried out by preparing agar nutrient medium. A hole board at the center of medium and ointment was by placed in it. The time taken by ointment to get diffused through was noted. (after 60 minutes)

LOD -LOD was determined by placing the formulation in petri-dish on water bath and dried for the temperature 105oC.

Solubility: Soluble in boiling water, miscible with alcohol, ether, chloroform.

Washability:Formulation was applied on the skin and then ease extend of washing with water was checked.

Non irritancy Test : Herbal ointment prepared was applied to the skin of human being and observed for the effect.

Stability study -Physical stability test of the herbal ointment was carried out for four weeks at various temperature conditions like 20 °C, 25°C and 37°C. The herbal ointment was found to be physically stable at different temperature i.e. 20 °C, 25°C, 37°C within four weeks.

RESULTS 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 sothat uniform mixing of the herbal extract with the ointment base was occurred which was stable during the storage. The physicochemical properties were studied which shows satisfactory results for spreadability, extrudability, was hability, solubility, loss on drying and others.

Also the formulation was placed for a stability study at different temperature conditions like 20 °C, 25°C and 37°C within four weeks. There were no changes observed in spreading ability, diffusion study as well as irritant effect.

1. Results of physical characteristics:

Sr. No	Plant Name	Obtained value			Std. Value		
		Colour	Odour	Taste	Colour	Odour	Taste
1.	Aghada	Green	Characteristic	Pungent bitter	green	Characteristic	Pungent bitter
2.	Bavanchi	Green	Characteristic	Bitter	Green	Characteristic	bitter

2.Result of Extractive value Determination:

Plant name	Extractive value
	Alcohol soluble Extractive value
1. Aghada	4%w/w
2. Bavachi	5%w/w

3.Result of Plant extracts preparation :

SR. No.	Plant Species	Part Use	Percentage Yield (w/w)	Physical characteristics			
				Colour	Odour	Taste	Solubility
1.	<i>Achryanthes aspera</i>	Leaf	4%w/w	Green	characteristic	Pungent, bitter	Soluble in boiling water , miscible with alcohol, ether, choloform
2.	<i>Psoralea Corylifolia</i>	Leaf	5%w/w	green	characteristic	Bitter	Soluble in boiling water , miscible with alcohol, ether, choloform

4.Result of preliminary Phytochemical screening of extract:

Sr. No.	Test	Plant extract	
		Aghada	Bavachi
1.	Carbohydrate	+	+
2.	Proteins and Amino acid	-	-
3.	Alkaloids	+	+
4.	Glycosides	+	+
5.	Steroids	+	+
6.	Triterpenoids	-	+
7.	Tannis	+	+
8.	Phenolic Compounds	+	+
9.	Flavonods	+	+
10.	Saponins	+	+
11.	Vitamins	-	-

Physicochemical evaluation of formulated ointment :
Table 3: Physicochemical evaluation of formulated ointment
Physicochemical parameters observation -

Physicochemical parameters	Observation
Colour	Greenish brown
Odour	charactristic
Consistency	Smooth
PH	6.5
Spreadability(seconds)	
Extrudability	0.26gm
Diffusion study (after 60 min)	0.7 cm
Loss on drying	30%
Solubility	Soluble in boiling water, miscible with alcohol, ether & chloroform
Washability	good
Non irritancy	Non irritant
Solubility study(20 ⁰ C, 25 ⁰ C, 37 ⁰ C)	Stable

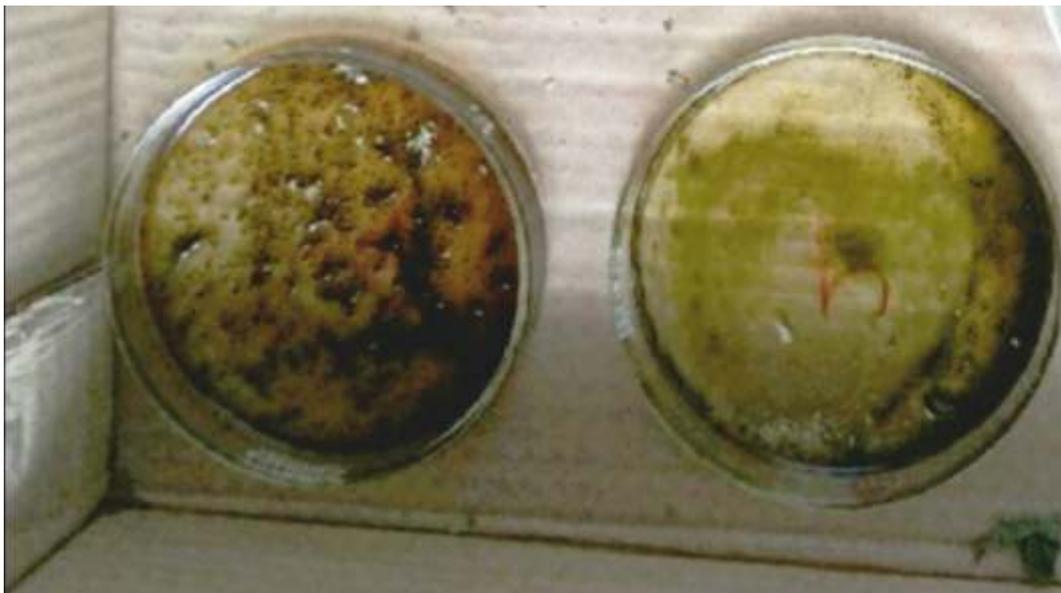


Figure 1: Dried extract of samples



Fig.2. pH



Fig.3: Spreadability test



Fig.4: Extrudability



Fig.5: Diffusion study

CONCLUSION :

From the ancient time Bavanchi and Aghada is used for their various medicinal properties like antihealing, antidiuretic, skin eruption, impotence, etc. Thus this ointment could become a media to use these medicinal properties effectively and easily as a simple dosage form.

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