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FORMULATION AND EVALUATION OF POLYHERBAL ANTI-DANDRUFF HAIR GEL.

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ABSTRACT :-Dandruff is common hair problem most causing problem, most common dandruff causing fungi are *Malassezia furfur, pityriasis simplex and pityriasis capitis*. Dandruff is common disorder affecting the scalp condition caused by yeast Pityrosporum. Dandruff can not be completely eliminated but can only be managed an effectively control in that way. In present Research work deals with the formulations and evaluation of polyherbal Antidandruff hair gel containing alcoholic extracts of *Azadirachta indica*as antifungal and antiinflammatory agent, *Embilica officinalis*as an antimicrobial agent and *Glycyrrhiza glabra*as antifungal and antimicrobial agent and then formulated polyherbal antidandruff hair gel were subjected evaluation parameter like physical evaluation, washability, pH, spreadability, homogeneity and antifungal activity.

KEYWORDS: Dandruff, malassezia furfur, Azardichta indica, Glycyrrhizin glabra , Embilica officinalis

I. INTRODUCTION

DANDRUFF

Dandruff is a major cosmetic problem that poses very great public health concern both in developed and developing countries.1 The word dandruff (dandruff, dandriffe) is of Anglo-Saxon origin, a combination of"tan" meaning "tetter" and "drof"meaning" dirty").2 Dandruff is a chronic scalp condition characterized by scaling, itching and redness of the scalp. It occurs when scalp sheds epidermal cells in large clumps. The skin of scalp renews itself about once a month Usually, scalp sheds dead cells in nearly invisible way, but sometimes cell turnover becomes unusually rapid and dead cells are shed as visible flakes called dandruff.3

According to the symptoms dandruff is classified into two types – Dry (common) and Oily dandruff.

A)Dry (common) dandruff also known as Pityriasis simplex is characterized by excessive formation of minute scales of white grayish or ashen color, accumulating on the scalp area oily dandruff or Pityriasis steatoides. It arises on the scalp skin with varied intensity of sebum production. It appears most often in young men following puberty (aged between 18 and 24).

B)Structure of Hair:

A hair is composed of columns of dead, keratinized cells welded together. The shaft is a superficial portion of the hair, which projects from the surface of the skin. The shaft of straight hair is rounded in cross section, that of wavy hair is oval and that of wooly hair is elliptical or kidney shaped. The root is the portion of the hair deep into the surface that penetrates into the dermis and sometimes into the subcutaneous layer. The shaft and root both consist of three concentric layers.12a.Medulla: It is the central part of the shaft and is generally noticeable in thick hair. It is composed of two or three rows of polyhedral cells containing pigment granules and air spaces.b. Cortex: It is located peripheral to the medulla and forms the major part of the shaft. It consists of elongated cells, containing pigment granules in dark hair while air in white hair.c. Cuticle: It is the outermost layer of the hair and consists of a single layer of thin, flat cells, which are heavily keratinized. 13.

C)GElS

A gel (from Latin Gelu-freezing , cold , ice or gelatus-frozen immobile) isa solid , jelly like material that can have properties ranging from soft and weak to hard and tough. Gels are defined as a substantially dilute cross linked system,which exhibit no flow when in the steady state. By weight, gels are mostly liquids .

D) COMPOSION OF GEL

Gel consist of solid three dimensional network that spans the volume of a liquid medium and ensures it through surface tension effects .This internal network structure may result from physical bonds (physical gels) as well as crystallites or other junction that remains intact within the extending fluid.

TYPES OF GEL

Hydrogels

Organogels

Xerogels

F)PROPERTIES OF GEL

Many gels display thrixotropy , they become fluid when agitated , but resolidify when resting . In general , gels are apparently solid, jelly like materials. By replacing the liquid with gas it is possible to prepare aerogels , with exceptional properties including very low density, high specific surface areas , and excellent thermal insulation properties.

II. EXPERIMENTAL WORK AND METHODOLOGY

1. Collection of herbs :

The leaves of Azadirachta indica , fruits of a Embilica officinalis was collected from local area of osmanabad , also the roots of Glycyrrhiza glabra was collected . Plant material are shade dried and coarsely powdered for extraction.

Formulation table:

SR.NO.	INGREDIENTS	QUANTITY TAKEN
1	Azadirachta indica extract	0.5 g
2	Embilica officinalis extract	0.5 g
3	Glycyrrhiza glabra extract	0.5 g
4	Carbapol	0.3 g
5	Polyethylene glycol	7 ml
6	Methyl paraben	0.075g
7	Poly vinyl pyrrolidone	0.05g
8	Triethanolamine	0.6 ml
9	Glycerine	3ml
10	Water	Upto 50 ml

III. FORMULATION OF POLYHERBAL ANTIDANDRUFF HAIR GEL:

Take Measured quantity of methyl paraben , glycerin and weighed quantity of polyethylene glycol were dissolved in about 35 ml of water in a beaker.

Then it was stirred at high speed using mechanical stirrer.

carbaol 940 and polyvinyl pyrrolidine were added slowly to the beaker containing above liquid while stirring.Triethanolamine (neutralizing agent) was added slowly while stirring till to attain gel structure. Required proportion of Azadirachta indica, Embilica officinalis and Glycyrrhiza glabra extracts were added to the prepared gel and stirr continuously to form proper gel.

IV. EVALUATION OF POLYHERBALANTIDANDRUFF HAIR GEL:

A. Physical evaluation :

Physical parameters such as colour , appearance, and consistancy were checked vidyalay.

B. Washability:

Formulation were applied on the skin and then ease and extent of washing with water were checked manually .

C pH :

The pH of the prepared polyherbal hair gel in distilled water (10%v/v) was evaluated by placing drop of solution on a piece of pH paper and compare the paper with the pH scale.

D. Spreadability:

Spreadability of gel was measured with glass slide apparatus, excess of gel was placed between two slides and 1kg weight was placed on slide for 5 min to compress the sample to uniform thickness, time in seconds to separate two slides was taken as measure of spreadability

S= wl / t

Where,

S= spreadability(g cm/ sec)

W=weight on upper slide(g)

l = length of slide(cm)

t = time taken in sec

E. Homogencity:

The developed gels was tested for homogeneity by visual inspection after the gel have been set in the container spread on glass slide , for the appearance , tested for the presence of any lumps , flocculates or aggregates.

F. Skin Irritation:

The skin irritation was carried out on human volunteers . For formulated gel, five volunteers were selected and 1.0g of formulated gel was applied on an area of two square inch to the back of the hand the volunteers were observed for lesions or irritation

G. Microbial assay :

The antifungal activity of different formulations was determined by modified agar well diffusion method

Method:

Add 0.1 ml of the innoculum / 10 ml of previously molten sabroud dextrose agar media, shake well to disperse equally and immediately pour in a sterile plates allow to solidify taking care that the thickness of layer is uniform and incubated for 24 hoursat 22-27^0 c.

Procedure for activity:

Add 0.1 ml of the innoculum /10m l of previously molten sabroud dextrose agar media, shake well to disperse equally an d immediately pour in a sterile plates allow to solidify taking care that the thickness of layer is uniform. Two wells were prepared in each agar plate. Pour the standard solution in one plate with 50ug/ml concentration. In another plate prepared formulation is transferred into the well with 50 ug/ml concentration. Plates are kept for incubation for 24 hrs at 22- 27^0 c. [26,27,28,29]

TABLE NO 1 Evaluation Result.

EVALUATIONPARAMETERS	**OBSERVATION**
Physical evaluation Colour Appearance Consistency	 Pale brown in colour Smooth Good
Washability	Good
pH	7
Spreadability	8.1
Homogeneity	No lump
Skin irritation	No irritation
Antimicrobial activity against penicillium chrysogenum	8.1

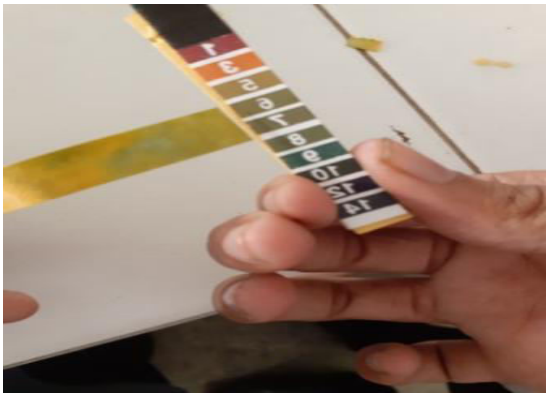

Fig no:1pH determination

V . RESULT AND DISCUSSION

The polyherbal anti-dandruff hair gel was formulated by adding the required amount of herbal ingredients and other excipients as given in formulation table. These prepared polyherbal anti-dandruff hair gel was evaluated for various parameterslikephysical evaluation, washability , PH determination, spreadability, homogeneity , skin irritation test and antifungal activity against penicillium chrysogenum

The present work is based on the formulation and evaluation of polyherbal anti-dandruff hair gel containing herbal ingredients such as Neem extract, Amla extract, Glycyrrhiza glabra extracts.

This polyhebal anti-dandruff hair gel was prepared by continous stirring on magnetic stirrer . The prepared polyherbal anti-dandruff hair gel was evaluted for different parameters. It showed pale brown in colour and smooth in appearance and having good washability and homogeneity, pH7, and also it ehnances the natural health of hairs and make them shiny .It also shows the antifungal activity against the penicillium chrysogenum.

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