



PRACTICE SCHOOL

Report on

Formulation and evaluation of polyherbal antidandruff Shampoo.

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BACHELOR OF PHARMACY

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ABSTRACT:-

The primary objective of this research is to formulate and evaluate a herbal shampoo, as well as to find out its physicochemical performance with a focus on product safety, efficacy and quality. Herbal shampoo is a natural hair care solution that removes grease, dirt and dandruff and promotes hair growth, strength and thickness. It also gives softness, smoothness and shine to the hair. Shampoo for cosmetics is made up of different types of drugs. Hair loss, increased scaling, itching, pain, nausea and headache are some of the negative effects of these drugs. Consequently, efforts are being made to produce herbal shampoos that are free from adverse effects. The main objective of this study was to remove harmful synthetic ingredients from the formulation of shampoos and replace them with safe natural ingredients.

Keywords: Aloe vera, Cosmetic, ingredients, nausea, Herbal shampoo, Dandruff, Hibiscus, ashwagandha, etc.

1.INTRODUCTION

the concept of beauty and cosmetic dates back to ancient and mankind and civilization generally herbal cosmetics are also referred to as natural cosmetics. Herbal cosmetics are formulated using different cosmetics ingredients to form the base in which one or more herbal ingredients are used to care various skin ointment plants are highly used for development of new drug products For cosmeceuticals and pharmaceutical applications.herbal cosmetic are the products in which herbs are used crude or extract form.[1]

Antidandruff herbal shampoo Introduction

Definition according to FDA"

According to &c act 1950, "cosmetic" mean's any article intended to be abused, poured, sprinkled or sprayer or, or introduced into orc applicated to, the human body or Tony part thereof for cleansing beautifying promoting attractiveness, at altering the appearance, land includes any article intended for use as a component of cosmetic.[1]

Cosmetic regulation in India.

The cosmetic product in India are regulated under the drug and Cosmetic Act 1950 and Rules 1955. and Labelling Declaration by the Burao of Indian standards (BIS).

1.1.History of shampoo

the word cosmetic "which is a Greek wo shish means " to Sidon In early day's the effective shampoos were prepared by the use of Gooseberry i.e. Amla and the Spindus which is called as saopnut.It contains the fruit pulp which contain the secondary metabolites saponin which act as a Natural surfactant The soapberries make the hairs soft, shiny and silky.During the early days in Europe the hair stylist were using u soap and boiling i also it with water and added herbs and fragrance. Various In India the "CHIK INDIA" launched in 1983.It was the first sachet shampoo introduced in India, The shampoo manufactures in India was evolved since 1960'S. This became the part of lifestyle in new and developing india,[3]

The shampoo industries are divided in basic 2 sectors or platform like

1. Synthetic shampoo industries
2. Herbal shampen industries

1. synthetic shampoo manufacturing industries

- Hindustan uniliver :-
 1. manufacture shampoo with brand name
 2. Clinic plus,

3. sun silk,
4. dove,
- i TRESESME.

5. Proctem and inramble Brand names are Head & shoulder Pantene
 6. Cavin care
 7. Garnier
2. Herbal shampoo manufacturing industries

- Himalaya India
- Patanjali, others[4]

1.3. what is herbal shampoo.

The shampoo is which is meant for cleaning the and scalp Herbal shampoo is a shampoo which includes all the natural products Like various herbs and medicinal plants. The herbal shampoo include plant like Aloe Vera, Neem, Hibiscus, Reetha, shikakai, Amla, and many more Types of herbal shampoo.

1. Anti-hair fall shampoo.
2. conditioner shampoo.
3. shampoo for Luis hair.
4. Anti-Fizz & shine box wavy Hair.
5. moisturizing & cuts defining for curly.
6. odor protect & volumizing for straight hair.
7. strengthening & protecting Spa moss coal shampoo.
8. plant keratin shampoo.
9. men's moisture shampoo.
10. Gentle baby shampoo.[3]

2.ANTIDANDRUFF SHAMPOO

2.1.Dandruff :-

Dandruff is a harmless, chronic condition that occurs when the scalp becomes dry or greasy and produces white flakes of dead skin that appear in the hair or on the shoulders. Although it is harmless, dandruff can be embarrassing for those who have it. Skin cells are formed continuously on the scalp, so the shedding of dead skin cells is a normal process. With dandruff, however, skin cells are shed at a faster rate than normal. Oil from the scalp, causes the skin cells to clump together and appear as white flakes.

2.2.Causes of antidandruff

- Dry skin: -

Dry skin is the most common cause of dandruff. Flakes from dry skin are generally smaller and less oily than those from other causes of dandruff, and you likely have other symptoms and signs of dry skin on other parts of your body such as your legs and arms.



- Irritated oily skin (seborrheic dermatitis):-

This condition is marked by red, greasy skin covered with flaky white or yellow scales.



- Not shampooing often enough

If you don't regularly wash your hair oils and skin cells your scalp can build up causing dandruff



- Other skin conditions: - people with skin conditions such as,

1. (eczema):- a chronic, inflammable skin condition

2. Psoriasis: - skin condition where rapid buildup of dead skin cells that form thick scales may appear to have dandruff.



- A yeast-like Fungus (Malassezia)

Malassezia lives on the scales of most adults, but for some, it irritates the scalp, this can irritate your scalp and cause more skin cells to grow. The extra skin cells die and fall off making them appear white and flaky in your hair or on your clothes.

- Sensitivity to their hair care products Contact dermatitis.

Sometimes sensitivities to certain ingredients in hair care products or hair dyes, especially paraphenylenediamines can cause a red, itchy scalp, shampooing too often or using too many styling products also may irritate your scalp, causing dandruff.[5]

2.3.Treatment: -

- follow a healthy diet.
- Avoid Stress.
- Use shampoos having combination of special ingredients to control dandruff.
- Use anti-dandruff shampoo.[6]

2.4. Herbal antidandruff shampoo.

herbal antidandruff shampoo is a cosmetic formulations which Contain herbal ingredients such as plant extracts and essential oil This herbal shampoos size generally used to remove the dandruff.

2.5. Ingredients of a shampoo.

1. Detergents :- Shampoo generally include artificial detergents or surfactant as cleansers. A detergents or surfactant is amphiphilic in nature, which means the detergent molecules both lipophilic and hydrophilic sites. The lipophilic sites assist to bind sebum, oily dust and hydrophilic and bind to water.

2. Conditioners:- hair conditioning Features are to impart manageability, softness, gloss and residues of hairs this may be included in the shampoo which then serves dual function of cleaning and conditioning.

3. Thickeners:- These are introduced to alternate the physical and optical properties of the shampoo. many shampoos are pearlescent. thickeners like sodium chloride are used to increase the product viscosity. These do not show any direct cleansing

4. Preservatives:- preservatives withstand germs and save us from decomposition of the shampoos They also prevent various other health risks that accompany infection through germs & bacteria Conditioner.[7]

Literature review:-

1. Bhati Deepak, et al (2020) present research was to formulate and evaluate the anti-dandruff activity of shampoo which was prepared from herbal plant. Dandruff cannot be completely eliminated but can only be managed and effectively controlled.
2. Swadhin Routary, et al (2022) Synthetic hair shampoos damage the hair cuticle leaving it brittle, dull and dry. Although the formulated shampoo contains synthetic chemical as SLS (7.5%) but its percentage is too small as compared to synthetic shampoo (10-40%) available in the market. The evaluation study on our shampoo showed good cleaning action, better foaming capacity, and quick wetting time.
3. Naveen Balaji, et al (2019) When the elastic limit of the material is high, elastic deformation may make the major contribution & on removal of the applied load, the extent of the elastic relaxation depends on the value of the material's modulus of elasticity (Young's modulus).
4. M.R. Dinesh, et al (2019) The results which are fetched out of number of physical and chemical tests and properties of the polyherbal dry powder antidandruff shampoo are highly satisfactory. The said are up to the mark of utility of the product with safety and promising results. Such results are estimated out of a formulation to establish strong results for the usage and good results of the product.
5. Cindy Agustina et al, (2024) In this review, based on the results of the organoleptic test, viscosity test, pH value test, high foam test, and antifungal activity test on henna leaf extract shampoo preparations and pedada fruit extract, it was concluded that pedada fruit extract shampoo is more effective to be used as anti-dandruff shampoo.

Literature review:-

6. Faith and patients at el, (2023) Anti-dandruff shampoo is a specialized hair care product designed to eliminate dandruff, a common scalp condition characterized by flaking and itching. Regular use of anti-dandruff shampoo can help prevent embarrassing flakes and restore confidence in your appearance.

7. slide serve at el, (2016) Eve'scave Anti Dandruff Hair Oil averts dandruff by wiping out microbial diseases of the scalp. It supports the scalp and keeps hair healthy. Massaging hair with this supplement rich hair oil gives additional food to the scalp and counteract dandruff. Rubbing likewise increases blood dissemination to the scalp, which fortifies hair roots.

8. Gayatri Vikram salunke et al., (2020), The study attempted to develop face serum using extract of green tea and examine their efficacy for manage specific skin concern wrinkles, dry skin, dryness etc.

9. Sharmila Dusi et al., (2021) Satpute KL et al., (2019) The aim of the study to prepare herbal face serum by using clitoria ternatae and aloe barbadensis for skin treatment which reduce fine line, give even tone, minimize pores.

10. Mourya Aman* et al., (2017) the aim of the study to formulate and evaluate herbal face serum from rose water and coconut oil. Rose water it have fragrance property which give good fragrance and reduce open pores. Coconut oil gives nourishing effect on your skin and clam the skin

3.Methods and material :

3.1.Amla

Amla known as Indian gooseberry, is an ample source of vitamin C. It is full of many health benefits. Powdered Amla is used as an essential of hair tonics, required to enhance hair growth and improve hair pigmentation. It gives power to the roots, takes care of the colour, and improves luster. Amla od application to the roots of hair improves hair growth and color. The very popular use is to decrease baldness and hair loss. This quality is due to the tannin contents as tannic acid, ellapic acid, gallic acid, iron and antioxidant material that freezes free radical NRD damage to hair follicles, caused by dandruff.



- Strengthen the Scalp and Hair.
- Reduce premature pigment loss from hair, or greying Research Through Innovation.
- Stimulate Hair Growth.
- Reduce Hair Loss.
- Prevent or treat dandruff and dry scalp.
- Prevent or treat Fungal and Bacterial hair and Scalp infection.
- Improve overall appearance of Hairs.[8]

3.2.Hibiscus :-

Hibiscus or 'gudhal' is the most beneficial ingredient for hair. It is used for the growth of hair, its regrowth, and hair loss. Hibiscus carries amino acids, Vitamin A, C and alpha hydroxyl acids along with other nutrients that are highly beneficial for hair and scalp. They keep scalp healthy and minimize the chances of dandruff of hairs.



- Stimulate Hair Growth & Lost hair volume & Later over the years.
- Conditions Hairy.
- Prevent Baldness (Minoxidil & Finasteride).
- Treat Dandruff & itchy Scalp.
- Prevents premature greying.[9]

3.3.Shikakai :-

- Cleanses Hair.
- Add more Shine to the Hairs.
- Prevents Grays To Cray Hair Loss.
- Prevents Lier.
- Psoriasis, Eczema & Scabies Provides Nourishment to the heir and promote healthy and rapid hair growth Pervert Split ends.[10]



3.4.Aloe Vera:-

- Calms an itchy scalp.
- Deep cleans oily hairs.
- Strengthens.
- Aloe Promote hair growth.
- Aloe Vera contains proteolytic enzyme which repairs dead skin cell on scalp.
- Smooth natural curls reduce fizziness.
- Detangle hairs.[11]



3.5.Rose Oil-

- It repairs hair damage.
- Improves Growth of hairs.
- Reduces the dandruff.
- Gives fragrance to the shampoo.[12]



3.6.Lemon Juice:-



- Add More shine.
- Get rid of dandruff Split ends.
- Reduces Hair fall.
- Gives Natural colour to hairs.
- Promotes the growth of hairs.
- Great hair mask for dry and damage hairs.[13]

3.7. Soap Nut (REETHA)

Reetha shows cooling effects and acts as an excellent cleanser on the skin, Soapnuts prevent the scalp from drying and retain the softness of the skin. The moisture of soapnuts and chickpeas when applied on the skin gives good effects on the skin. It makes skin soft and tender. It is also used in removing flakes of cells on the scalp.[13]



- Stops Hair Fall.
- Prevents Dandruff.
- In Fight Against Scalp Infection.[14]

3.8.Bhringraj:-



Bhringraj of false dairy is a medicinal herb that promotes hair growth. It is a popular ayurvedic ingredients wed for hair growth It helps to empower blood circulation to the scalp by stimulating and triggering hair growth, which have been lost due to any cause, probably, dandruff, etc. It also prevents scalp problems, caused by dandruff and irritation, in order to make sat that hair growth remains unaffected.

- Stops Hair Fall
- Prevents Dandruff
- Fight Against Scalp Infection.[15]

3.9.Neem:-

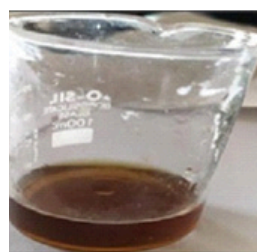


Neem helps to clean the scalp. It clears the clogged pores and improves hair growth. The regenerative properties are extremely essential for the treatment of dandruff. It is endowed with antiseptic and healing properties and it can be used for a variety of hair problems. Dandruff can be removed by using neem leaves as a rinse. The most common neem uses are in our hair care rituals. As per Ayurveda, amla, reetha, neem, shikakai are herbs needed for healthy locks, enhanced hair growth, decrease hair fall and make the hair voluminous.[16]

4.Preparation Process:-

Sr. no	Ingredients	Quantity	Role of ingredients
1.	Amla powder extract	10ml	Darken hairs
2.	Hibiscus	10ml	Foaming agent
3.	Shikakai	10ml	Foaming agent
4.	Aloe vera	10ml	Conditioning agent
5.	Rose oil	10ml	Nureshing agent
6.	Lemon juice	10ml	Vit. C antioxidant
7.	Reetha(soap nut)	10ml	Foaming agent
8.	Bhringaraj	10ml	Antibacterial
9.	Neem	10ml	Antibacterial
10.	Water	Q.S.	Vehicle

- All the plant materials were collected from Ayurveda store.
- All the ingredients were accurately weighed and soaked in water overnight individually.
- Then the ingredients are boiled in the same water.
- Later the mixture were cooled, filtered and collected.



5.Evaluation Parameters for Antidandruff Shampoo

was taken and kept at room temperature ($30 \pm 2^\circ\text{C}$) as Organoleptic properties. well as refrigerator ($4 \pm 2^\circ\text{C}$) for duration of one month. Developed formulation was evaluated for their The samples were tested for their physical appearance, color, physical state, odor, solubility was determined pr, viscosity, %cleaning action and foam stability manually.

pH :-10%v/ shampoo solution is prepared distilled water and pH of hits solution was measured with digital pH meter at room temperature $30 \pm 2^\circ\text{C}$.

Determination of percentage solids contents:- A-clean dry dish was weighed and added with 4 grams of shampoo. The dish with shampoo was weighed. The exact weight of the shampoo was calculated. The dish with shampoo was placed on the hot plate until the liquid portion was Evapurated . The weight after drying was calculated.

Wetting time (sec):- A cotton ball weighing of about 0.44gm was taken and added ti to container containing shampoo. Time taken for cotton to sink at of the formulation was measured bottom as wetting time.

Surface tension:- me assortment Dilute het shampoo using distilled water to fix 10% as concentration. Measurement were carried out using stalagmeter.

Viscosity:- The index of resistance to flow was determined using Brookfield viscometer DV-II + Pro at room temperature i.e. $30 \pm 2^\circ\text{C}$ with varying rpm and torque.

Foam formation/Foam stability:- Cylinder shake method was used. 50ml of %1 solution of shampoo is taken in graduated cylinder (1ml in 100ml water), shake for ten minutes and record the foam produced after 1 minute. Record the stability of foam after 4-5 minutes.

In-vitro anti-dandruff activity:-

Well diffusion assay method was used. The antimicrobial efficiency of polyherbal anti dandruff shampoo was examined against *Malassezia furfur* using an agar well diffusion assay method. 500ul fungal cell suspension was spread onto the Sabouraud Dextrose Agar (SDA) plates and wells (8mm diameter) were made on the agar plates using a sterilized stainless steel cork borer. The wells were loaded with 20ul of the respective shampoo. The plates were incubated at 35 °C.

Table 2: Evaluation of Formulations for physical appearance, pH , Solids and viscosity

Formulation code	Physical appearance	pH	Solid(%)	surface tension dy./cm	Viscosity
F1	Clear, good foaming, no characteristic smell	6.22 ± 0.01	23.21 ± 0.02	38.45 ± 0.22	6.5 ± 0.2
F2	Clear, good foaming, no characteristic smell	5.82 ± 0.03	24.52 ± 0.01	37.25 ± 0.45	6.1 ± 0.4
F3	Clear, good foaming, no characteristic smell	5.53 ± 0.04	25.23 ± 0.02	39.23 ± 0.13	5.8 ± 0.1



F1



F2



F3

formulations

Result and Discussion:-

Result:-

The results of visual inspection of series of formulations As can be seen, all formulations were clear and had the good characteristics with respect to foaming. The main challenge with this formulation was of characteristic smell of A.neem. With less concentration, i.e. formulation F1 and F2 were free from characteristic smell and were acceptable, but in F2 and F3 the smell was observed.

Discussion :-

The herbal shampoos are the preparations which are used for the washing and cleaning of hairs and to provide nourishment. The herbal shampoos are widely used due to their no or less side effects as compared to conventional shampoos, because it contains pure natural or herbal ingredients rather than synthetic chemicals. Herbal shampoo does not require animal testing and it is earth and skin friendly.

7. Conclusion:-

The study demonstrates that formulating a natural herbal shampoo using garlic aqueous juice, which exhibits antimicrobial and antifungal properties, offers a superior alternative to shampoos containing synthetic chemical antimicrobial agents. Preliminary physicochemical and stability studies indicate that this herbal shampoo is effective, economical, and aligns with consumer preferences for natural products.

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