



Formulation And Evaluation Of *Launaea Pinnatifida* Herbal Hair Oil.

Mr.Mirza Umer Baig Ahmed Baig.

Dr.Prachi Udhapurkar.

(PhD , Principle of Kishori Colleague Pharmacy)

Asst. Prof. S.R.Zine.

(M.Pharm.)

Kishori College Of Pharmacy, Beed, Maharashtra, 431122.

ABSTRACT

Herbal hair oil has been used for maintaining the good health of hair and enhancing the appearance of an individual from the centuries. The hair oil is used to treat various problems related to hair such as hair thinning, loss of hair, itching in the scalp due to dandruff. The aim of the present study is to formulate the herbal hair oil using various herbal plants or specific part of the plant. Every herb used in the formulation of hair oil possess a specific activity that can help to prevent the various problem related to hair. The ingredient which are used in the formulation are *lacunae pinnatifida*, neem, amla, shatavari, camphor, sesame oil and coconut oil. Multiple parameters, including pH, specific gravity, viscosity, patch test, saponification value, and acid value, were used to analyze the hair oil formulation.

KEY WORDS: *lacunae pinnatifida*, neem, amla, shatavari, camphor, sesame oil

INTRODUCTION

Launaea pinnatifida also known as *launaea sarmentosa* belonging to family Asteraceae, has long been used as a folk herbal remedy for a variety of ailments. It is only found in coastal locations, Madagascar, the Seychelles and Africa's east coast Mauritius, India, srilanka, and Southeast Asia are among the countries in the region ¹. It's been used to treat allergic illness as a cooling, diuretic and demulcent.² Latex from *L. sarmentosa* is also commonly used by fishermen to heal skin injuries caused by fish spines while fishing³. Leaflets range in size from 10 to 15 cm in length and have a toothed structure. The leaves have a slightly bitter taste and a distinct odor. *Launaea* is a genus of the controversial drug *gojihva*.¹ The leaves of the plant are lookalike of cow tongue hence it is called as "Gojihva" in Ayurveda.

Standard methods were used to test the antioxidant capabilities of the *L. pinnatifida* leaves and roots fractions. Ascorbic acid had the lowest IC₅₀ in all four antioxidant assays, indicating that it has the best antioxidant capacity as a conventional medication, followed by LPLM/F₃ and LPLM fractions.⁴

Hair oil:

The hair oil is used for dressing and nourishing the hairs and grace to appearance of hair. This preparation generally used to increase the growth of hair and remains healthy Man.

Humans can have a variety of hair colors, including silver blonde, blazing red, and pitch black.. Physical properties of hair are also as it imparts beauty to the hair. The texture and sensories of hair, i.e., the way hair appears and feels, is depend on the health of hair and its physical properties.

Regular application of oil is known to increase the strength of hair and prevents its breakage. Coconut based hair oil also helps in aligning the cuticles of hair. Application of oil lubricates hair and reduce the force required to comb thereby preventing its breakage and also prevents loss of moisture and keeps hair soft and supple in summer season.

Properties of hair oil:

They give luster to the hair

Retain them soft and flowing

Prevent premature grayness

Keep the brain cool

PHYSIOLOGY OF HAIR

Hair growth cycle: Hair development may be a continuous cyclic process and every one mature follicles undergo a growth cycle consisting of growth (anagen), regression (catagen), rest (telogen) and shedding (exogen) phases. The duration of the phase's changes supported the situation of the hair and also personal nutritional and hormonal status and age

1. Anagen

The anagen phase is presented by the onset of the mitotic activity within secondary epithelial germ placed between the club hair and dermal papilla at telogen hair follicle. The anagen is the active growth phase, the follicle enlarges and takes the original shape and the hair fiber is produced. Almost 84–90% of all scalp hairs are in anagen. Hair stem cells multiply through the anagen I-V stage, enclose the dermal papilla, move closer to the surface of the skin, and start to multiply the hair shaft and IRS, respectively.

2. Catagen:

At the highest of anagen, mitotic activity of the matrix cells is diminished and thus the follicle enters a highly controlled in volitionary phase mentioned as catagen. Catagen lasts approximately 2 weeks in humans, no matter the location and follicle type . During catagen the proximal of the hair shaft is keratinized and forms the club hair, whereas the distal a neighborhood of the follicle is involuted by apoptosis

3. Telogen:

The telogen stage is defined because the duration between the completion of follicular regression and therefore the onset of subsequent anagen phase. Telogen stage lasts for 2–3 months. Approximately 11–15 percent of all hair is in telogen stage. During the telogen stage, the hair shaft is transformed to club hair and eventually shed. The follicles remains in this stage unless the hair germ is responsive to anagen initiating

signals from the dermal papilla , starts to show enhanced proliferative and transcriptional activity in late telogen, resulting in the initiation of anagen.

4. Exogen:

The mechanism of hair shedding is less researched, but from the patient's point of view, it is perhaps the most crucial aspect of hair growth. It is commonplace for human telogen hairs to be retained from quite one follicular cycle and this means that anagen and exogen phases are independent. The shedding period is believed to be a lively process and independent of telogen and anagen thus this distinct shedding phase is known as exogen.

TAXONOMICAL CATEGORIZATION:

Table 1: Taxonomical classification

SR NO	BOTANICAL CLASS	SPECIFICATION
1	Kingdom	Plantae
2	Sub kingdom	Phanerogams
3	Division	Angiosperms
4	Class	Eudicots
5	Subclass	Asterrids
6	Order	Asterales
7	Family	Asteraceae
8	Subfamily	Chichorioideae
9	Tribe	Cichorieae
10	Subtribe	Sonchinae
11	Genus	Launaea



MATERIAL AND METHOD

COLLECTION OF PLANT MATERIAL

For the preparation of herbal hair oil plant material were collected from college medicinal garden of yash institute of pharmacy, Aurangabad and some of the plant materials are collected from market

PLANT MATERIAL:

Launaea pinnatifida



Synonym: Pathri, Gojihva, Launaea sarmentosa

Biological source: These are the leaves obtain from plant Launaea pinnatifida Family: Asteraceae

Chemical constituents: saponin, alkaloids

Uses: Antioxidant, anti-inflammatory, antimicrobial, antidiabetic and hepatoprotective.

NEEM:



Figure 3 Neem Powder

Synonym: Neem, Margosa, Azadirachta Indica, Indian Lilac

Biological source: Neem consist of the fresh or Dried leaves of Azadirachta indica Family: Meliaceae

Chemical constituents: Quercetin, Nimbosterol, Nimbin, Azadiractin.

Uses: Antiseptic, antibacterial, anthelmintic, Antidiabetic, Antifungal Antiviral

Amla



Synonym: Indian gooseberry, Emblic myrobalan.

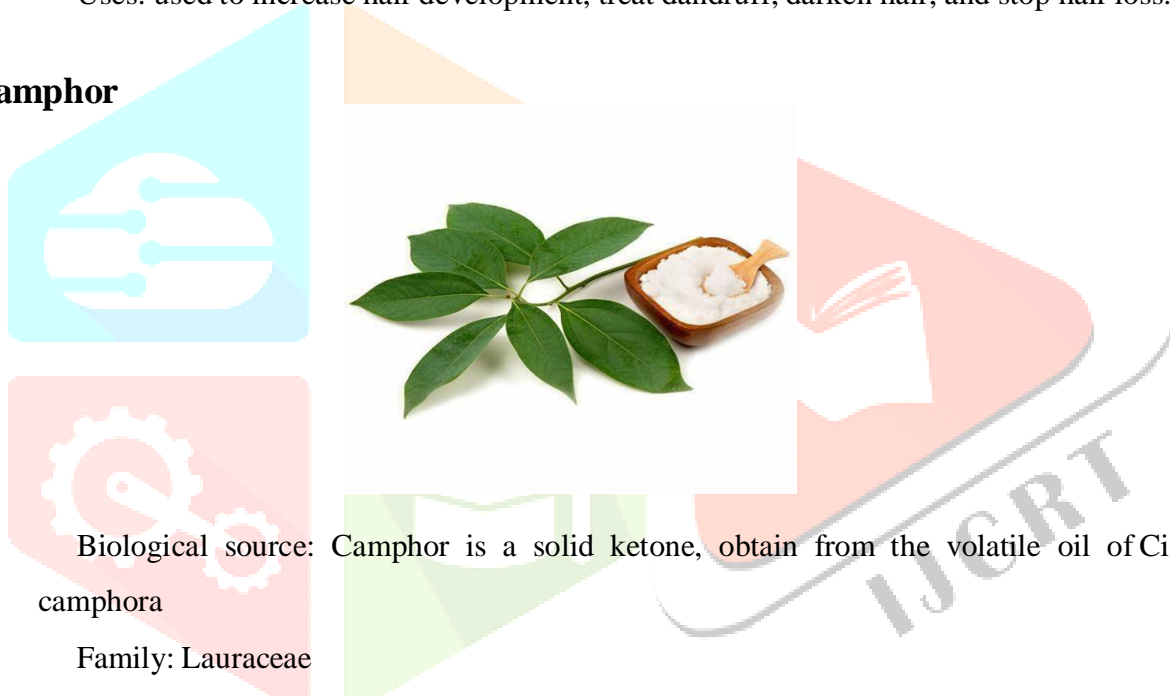
Biological source: This consist of dried, as well as fresh fruits of the plant *Emblica officinalis*

Family: Euphorbiaceae

Chemical constituents: Gallic acid, Ellagic acid and Vitamin C

Uses: used to increase hair development, treat dandruff, darken hair, and stop hair loss.

Camphor



Biological source: Camphor is a solid ketone, obtain from the volatile oil of *Cinnamomum camphora*

Family: Lauraceae

Chemical constituents: volatile oil, camphor, linalool, 1,8-cineole, nerolidol, safrole, or borneol.

Uses: anti-dandruff, antifungal

EXPERIMENTAL WORK**Table 2: Formulation Table**

Sr no.	Ingredient	Qty taken	Uses
1.	Launaea pinnatifida	5g	Antioxidant
2.	Neem	2.5g	Anti-fungal
3.	Amla	2.5g	Hair growth
4.	Camphor	1g	Anti-dandruff
5.	Shatavari	2.5	Hair growth
6.	Sesame oil	44ml	Vehicle
7.	Coconut oil	26ml	Moisturizer

FORMULATION PROCEDURE:

1. Accurately weight all the plant material such as leaves of launaea pinnatifida, Neem, Amla and Shatavari
2. Dry them in shade for 2-3 days. After drying grind the material to form a powder.
3. Mixed above powder material in 44 ml of sesame oil
4. The above mixture is boiled for 15 min in water bath
5. After boil add required quantity of camphor in it.
6. Then filter it through the muslin cloth
7. To the filtrate add coconut oil to make up the volume
8. If the formulation contains cloudiness again filter it with Whatman's filter paper.
9. Submit it in suitable container and perform evaluation test

EVALUATION

The evaluation of formulated herbal hair oil is carried out by performing following test of evaluation and general characterization

1. PATCH TEST:

The patch test is performed to check the formulation cause any irritation to superficial layer of skin. In this test the formulated herbal hair oil is applied on the skin of hand in about 1 cm of area and exposed it to sunlight for 4-5 min and check for any irritation, redness or swelling.



Figure 9 Evaluation of patch test

2. PH:

For calculating the ph of herbal oil formulation digital ph meter is used. before calculating the ph we first need to calibrate the digital ph meter with the buffer solution

Buffer solution:

Take 1 buffer (7ph) capsule and dissolve it in 100 ml of water. The 7 ph buffer solution is prepared

Then dip the electrode in the solution and calibrate is to 7 ph After that check the ph of our formulation.

VISCOSITY:

The viscosity of herbal hair oil is calculated by using Ostwald viscometer. The viscometer was mounted on a stand in vertical position. First water was filled in to the viscometer up to mark A. The time was calculated for water to flow from mark A to mark B. The same procedure was repeated for the formulated hair oil.

$$\text{Viscosity of oil } (\eta_2) = \frac{p_2 t_2}{p_1 t_1} \times \eta_1$$

$$p_1 t_1$$

p_1 = density of water

p_2 = density of sample oil η_1 =

viscosity of water η_2 = viscosity of sample oil

t_1 = time of flow of water from A to B t_2 = time of flow of oil from A to B

SPECIFIC GRAVITY:

Take specific gravity bottle washed it with distilled water dry it in oven. Close the bottle with cap and weight it (x), now fill the same specific gravity bottle with test sample and close it with cap and again weight it (y)

Determine the weight of sample per millimeter by subtracting the weight (y-x)

ACID VALUE:

Preparation of KOH solution – 0.56 gm of KOH pellets dissolve in 100 ml of distilled water and stirred it continuously

Filled the burette with 0.1 M KOH solution. Measured the 10 ml oil and add it in 250ml conical flask. Then add 50 ml mixture of ethanol : ether (1:1) in it and shake. Add 1 ml Phenolphthalein indicator and titrate against 0.1 molar KOH solution.



Figure 11 Evaluation Acid Value

RESULT AND DISCUSSION

One of the most popular hair treatments is herbal hair oil. Herbal hair oils not only hydrate the scalp, but they help repair dry scalp and hair. It offers a variety of crucial nutrients needed to maintain the sebaceous glands' regular activity and encourages the growth of healthy hair. The herbal hair oil is prepared by various ingredient that are shown in Table 02. The various evaluation tests - Patch test, pH, Viscosity, Specific gravity, Acid value, and Saponification value were performed. Hence from the present study it was found that the formulated herbal hair oil complies optimum standards and further study is needed to check the antioxidant activity of formulated hair oil.

Table 3 Evaluation OF Herbal hair oil

Sr no.	Parameter	Inference
1.	Color	green
2.	Odor	Odor of ingredient
3.	Grittiness	Smooth
4.	Patch test	No irritation & redness
5.	pH	5.74
6.	viscosity	0.89
7.	Specific gravity	1.124
8.	Acid value	4.71
9.	Saponification value	70.125

CONCLUSION:

All the parameter of formulated herbal hair oil showed that they are within the acceptable range, and because all of the ingredient used in the formulation have numerus benefits, this oil can be useful in the providing nourishment to the hair , preventing dandruff and itching which leads to beautiful hair. Further therapeutic antioxidant activity of formulated herbal hair oil is need to study.

REFERENCES:

1. T MH, J PD. *Launaea pinnatifida* Cass. A Species of the Controversial Drug Gojihva: Comprehensive Review. Available online on www.ijppr.com *International Journal of Pharmacognosy and Phytochemical Research*. 2019;11(4):240-243. doi:10.25258/phyto.11.4.1
2. Mahesh A, Thangadurai D, Melchias G. Rapid in vitro plant regeneration from leaf explants of *Launaea sarmentosa* (Willd.) Sch. Bip. ex Kuntze. *Biological Research*. 2012;45(2):131-136. doi:10.4067/S0716-97602012000200004
3. Hanh LH, Dung PD, Huy LD, et al. Chemical constituents of *Launaea sarmentosa* roots. *Vietnam Journal of Chemistry*. 2020;58(5):637-642. doi:10.1002/vjch.202000057
4. Pandya D, Dir D. *BIOACTIVITY-GUIDED ISOLATION, CHARACTERIZATION & ESTIMATION OF PHYTOCONSTITUENTS FROM LEAVES AND ROOTS OF LAUNAEA PINNATIFIDA CASS., A SPECIES OF THE CONTROVERSIAL DRUG GOJIHVA*. Accessed July 1, 2022. https://www.researchgate.net/publication/349590123_BIOACTIVITY-GUIDED_ISOLATION_CHARACTERIZATION_ESTIMATION_OF_PHYTOCONSTITUENTS_FROM_LEAVES_AND_ROOTS_OF_LAUNAEA_PINNATIFIDA_CASS_A_SPECIES_OF_THE_CONTROVERSIAL_DRUG_GOJIHVA
5. Dr. Pathak Kamla, Dr. Vaidya Ankur. *A Text Book of COSMETIC SCIENCE : Concept and Principle*. first. Nirali prakashn; 2018.
6. Inganakal TS. *Launaea pinnatifida* : Controversial Drug: A Review on Its Pharmacological and Traditional Uses. *Int J Phar & Biomed Res*. 2021;8(4):6-10. doi:10.18782/2394-3726.1116
7. Raju GS, Moghal MMR, Hossain MS, et al. Assessment of pharmacological activities of two medicinal plant of Bangladesh: *Launaea sarmentosa* and *Aegialitis rotundifolia* roxb in the management of pain, pyrexia and inflammation. *Biological Research*. 2014;47(1). doi:10.1186/0717-6287-47-55
8. Yadava RN, Chakravarti N. *New Antifungal Triterpenoid Saponin from Launaea Pinnatifida Cass*. Vol 48.; 2009.
9. Davis MG, Piliang MP, Bergfeld WF, et al. Scalp application of antioxidants improves scalp condition and reduces hair shedding in a 24-week randomized, double-blind, placebo- controlled clinical trial. *International Journal of Cosmetic Science*. 2021;43(S1):S14-S25. doi:10.1111/ics.12734
10. https://www.bing.com/images/search?view=detailV2&ccid=qu02XG0a&id=0E8ABBCF0CD121A7E61F432FC0A51671FC50A601&thid=OIP.qu02XG0aHSMx8QsLjmBv_gHaHa&mediurl=https%3a%2f%2fwww.foreign-trade.com%2fphoto%2fag%2fAmla+fruit+powder+5.jpg&exph=630&expw=630&q=Amla+Frui