FORMULATION AND EVOLUTION OF HERBAL SHAMPOO FROM COW URINE

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ABSTRACT: Because of their gentle nature, biodegradability, and medicinal advantages, herbal shampoos have attracted a lot of interest. With its antibacterial, antifungal, and hair-strengthening qualities, cow urine (Gomutra Ark) is a significant element in this study's creation and evaluation of a herbal shampoo. To improve cleansing, conditioning, and scalp health, the recipe also contains traditional herbal extracts including Aloe vera (*Aloe barbadensis*), Amla (*Emblica officinalis*), Neem (*Azadirachta indica*), and Reetha (*Sapindus mukorossi*). Essential oils, herbal extracts, a natural thickening agent, and mild preservatives were combined with cow pee distillate to create the shampoo.

The findings showed that the herbal shampoo was free of skin irritation, had a pH between 5.5 and 6.5, and had strong foaming and cleansing properties. Cow urine's antibacterial properties improved scalp hygiene by lowering microbial infections and dandruff.

KEYWORDS :

Cow urine,*Emblica officinalis,Azadirachta indica,*herbal shampoo,antibacterial.

INTRODUCTION :

Most likely, shampoos are utilized as cosmetics. It is a hair care product that we use on a daily basis to clean our hair and scalp. Shampoos are a viscous mixture of detergents with appropriate additions, preservatives, and active compounds that are most commonly used as beautifying agents [1] Typically, damp hair is rubbed with it before being rinsed with water to remove the residue. Shampoo is meant to remove accumulated dirt from hair without removing a significant amount of sebum [2]

Synthetic surfactants are added to shampoos primarily for their washing and foaming properties, but long-term usage of these surfactants can cause major side effects such dry hair, eye discomfort, and scalp irritation. We can use shampoos with natural herbs as an alternative to synthetic ones [3] However, creating cosmetics with solely natural ingredients is a very challenging task. Many medicinal plants that may have hair-related benefits have been utilized for centuries all over the world and are used in shampoo formulations. These therapeutic plants can be utilized in extracts, powders, crudes, or derivatives [4]

Although making cosmetics with entirely natural raw materials is challenging, herbal formulations are thought to provide an alternative to synthetic shampoo. There are numerous medicinal plants that are frequently utilized in shampoo composition and are said to have positive effects on hair [5] These plant materials can be employed as derivatives, refined extracts, powders, or crude forms.[6]

BENIFITS OF HEARBAL SHAMPOO [7]

1. Greater Glow
2. Reduced Hair Loss
3. Durable Color
4. Hairs That Are Stronger and More Fortified

FUNCTION OF HEARBAL SHAMPOO [8]

1. Lubrication
2. Preparation
3. Growth of Hair
4. Preserving Hair Color

ADAVANTAGES OF HERBAL SHAMPOO [9]

1. Ingredients that are pure and organic
2. Devoid of Adverse Reactions
3. Absence of surfactants such as SLS
4. Absence of artificial additives

Cow urine holds a special place in Ayurveda and is said to be the most potent animal-derived substance with countless medicinal benefits in the Sushruta Samhita and Astanga Sangraha. It has been identified as the nector of God, the water of life, or "Amrita" (beverage of immotality). For thousands of years, people in India have been drinking cow urine [11] It is a significant piece of Panchgavya Chikitsa material. Cow urine (Gomutra), milk (Godugdha), curd (Godadhi), ghee (Goghrit), and dung (Gomaya) are the ingredients of Panchgavya. The term Panchgavya

Chikitsa refers to the utilization of these five cow products for therapeutic purposes. It is utilized for plant growth and animal health in addition to human wellness [12]

The Sushrut Samhita sutra states that cow urine has the following properties: Agnidipaka (which stimulates digestion), Medhya (which enhances intellect), Katu Rasa (which is pungent), Laghu (which is readily digested), Tikshna (which penetrates), and Ushanavirya (which is hot in potency). It doesn't raise Vata because of Kshar Guna, an alkaline property. It lowers Vata and Kapha and raises Pitta [13]

COMPOSITION OF COW URINE [14]

Water makes about 95% of cow pee, followed by urea (2.5%), minerals, salt, hormones, and enzymes (2.5%). Iron, calcium, phosphorus, potassium, urea, uric acid, amino acids, enzymes, cytokines, lactose, and so forth are all present.

Fig no 1 :Cow

MATERIALS AND METHOD :

MATERIALS:

Table no 1 : Ingredients table

Sr.no	Ingredients
1.	Cow urine
2.	Reetha
3.	Shikekai
4.	Amla
5.	Hibiuscus oil
6.	Coconut oil
7.	Neem
8.	Rose oil
9.	Banayan roots oil
10.	Coffee
11.	Kadhipatta
12.	Honey
13.	Turmeric
14.	Lemon juice
15	Glycerine

Methods

1. Steps to Prepare Hibiscus Oil [16]

⬇ Take 2 flowers of hibiscus

⬇ Take 2 leaves of hibiscus

⬇ Grind them using a mortar and pestle

⬇ In a small pot, add ½ cup of coconut oil

⬇ Add the flower and leaf paste, boil for 4–5 minutes, and allow to cool

Role: Strengthens hair follicles and increases blood circulation

2. Steps to Prepare Banyan Root Oil [17]

⬇ Take 3–4 roots (Parambi) of the banyan tree

⬇ Grind them using a mortar and pestle

⬇ In a small pot, add ½ cup of coconut oil

⬇ Add the parambi paste, boil for 4–5 minutes, and allow to cool

Role: Provides shine to hair

3. Preparation of Herbal Shampoo Base

⬇ Take a large mixing beaker

⬇ Add ½ liter of cow urine (gomutra)

⬇ Add ½ liter of water

⬇ Add 50 g Neem extract (prepared by heating powder in water for 30–60 min and collecting extract)

⬇ Add 50 g Amla extract (prepared similarly)

⬇ Add 50 g Shikekai extract (prepared similarly)

⬇ Add 50 g Reetha extract (prepared similarly)

⬇ Add 50 g Kadhipatta extract (prepared similarly)

⬇ Add 2 spoons of honey

⬇ Add 10 g coffee powder

⬇ Mix thoroughly with gomutra and water until homogenous

⬇ Heat the mixture in an oven for 10 minutes until boiling

4. Incorporation of Hibiscus Oil

⬇ Add the prepared hibiscus oil to the herbal mixture

⬇ Mix thoroughly

⬇ Add lemon juice gradually to prevent foaming

5. Final Blending

⬇ Transfer the contents of Beaker 1 into Beaker 2 with proper stirring and mixing

⬇ Add rose oil as a coloring agent and to mask the odor of gomutra

⬇ Pour the final shampoo mixture into a glass bottle

⬇ Shake thoroughly and store

Role of ingredients

1.Cow urine [13,14]

Cow urine is used to shampoos because of its purported antibacterial, antifungal, and antioxidant qualities, which are thought to thicken hair, nourish it, and lessen dandruff and hair loss. Advocates claim that it makes hair shinier and smoother by acting as a natural conditioner and detoxifier. However, its usage in carefully prepared products is required because to its possible irritating effects on the skin, particularly at higher concentrations.

Fig no 2 :Cow urine

2.Reetha [18]

Because of its saponin concentration, which creates lather to wash away impurities, oil, and grime from hair and scalp, Reetha (soapnut) works as a natural cleansing ingredient in shampoos. Additionally, it acts as a gentle exfoliator to eliminate dead skin cells, calms the scalp, reduces dandruff by using its antimicrobial qualities, and nourishes hair to improve its strength, softness, and shine.

Fig no 3 :Reetha

3. Neem [19]

Neem in shampoo conditions the hair by feeding it and enhancing its structure and luster, strengthens hair follicles and improves circulation, and combats dandruff by lowering the fungus that causes it. In addition to calming the scalp and minimizing irritation, its antibacterial, antifungal, and anti-inflammatory qualities also support the general health of hair.

Fig no 4 :Neem

4.Amla [20]

In addition to being a rich source of minerals and vitamin C, amla contains 81% moisture. As a result, it keeps the hair nourished and well-hydrated. Using herbal amla shampoo keeps your hair hydrated and prevents it from drying out.

Fig no 5 :Amla

5.Shikekai [22]

Because of its high saponin content, which produces lather and eliminates excess oil and debris without depleting the hair's natural moisture, shikakai works as a mild, natural cleaner in shampoo. Additionally, it strengthens hair from the roots, adds luster and softness, lessens dandruff, and encourages hair development.

Fig no 6 :Shikekai

6.Kadhipatta [22]

Curry leaf, or kadi patta, provides nutrients such proteins, amino acids, vitamins, and antioxidants that strengthen hair, decrease hair loss, delay the onset of graying, and enhance scalp health. While natural oils and fatty acids give the hair hydration and shine, it also has antifungal and antibacterial qualities that help with scalp problems.

Fig no 7 :Kadhipatta

7.Coffee [23]

Coffee's main ingredient, caffeine, helps shampoo promote hair growth by boosting blood flow to the scalp, which aids in supplying nutrients to hair follicles. Additionally, it preserves hair follicles, smoothes and softens hair, exfoliates the scalp to get rid of debris, and enhances the natural color and gloss of hair.

Fig no 8 :Coffee bean

8.Hibiscus

By strengthening follicles, hibiscus shampoo can increase hair growth and decrease hair loss. It can also condition and smooth hair to minimize frizz, add shine, and prevent dandruff due to its antifungal qualities. By stimulating follicles and enhancing scalp circulation, it also offers mild cleansing and nourishes the scalp with vitamins and antioxidants, potentially delaying the onset of graying.

Fig no :9 :Hibiscus flower

9.Lemon juice [23]

Because of its acidity and antifungal qualities, lemon juice is used in shampoos to cleanse the scalp, get rid of extra oil, and combat dandruff. Additionally, it thickens hair, provides gloss, and, when exposed to sunlight, can naturally lighten hair color. To prevent possible harm, it should be used sparingly and frequently diluted because its high acidity can potentially cause dryness and irritation.

Fig no 10 :Lemon juice

Evolution parameters [24]

1. Appearance :

A shampoo should seem nice and inviting, just like any other cosmetic preparation. The physical attributes of the developed and commercialized shampoos, including color,

transparency, and odor, were assessed. Our created shampoo had a pleasant scent, was transparent, and was light green.

Fig no :11 Appearance of herbal shampoo

2. PH :

PH: Using a pH meter at room temperature (23±2 °C), the pH levels of the shampoo tested in 1% and 10% solutions were assessed.

3.Dirt dispersion:After mixing 1% shampoo solution with water, 10 milliliters of diluted shampoo were added, along with one drop of India ink. The test tube was then sealed and shook ten times. It was judged that there was none, mild, moderate, or substantial ink in the foam. Shampoos that concentrate the ink in the foam are regarded as being of low quality. The water part should contain the dirt. Any dirt left in the foam will be hard to rinse out and will end up back on the hair.

4.Foaming ability and foaming stability: The most used technique for assessing foaming ability is the cylinder shaking method. A 250 ml graduated cylinder was filled with 50 ml of the shampoo solution at room temperature, covered with a hand, and shaken ten times. Following 60 seconds of shaking, the total amount of the foam content was noted. The height of the foam that was produced was measured right away. The same process was used to measure the foam volume after 20 minutes in order to assess foam stability.

5. Percentage of solid contents: A dry, clean evaporating dish was covered with four grams of the prepared shampoo. An electronic balance was used to weigh the shampoo-containing evaporating dish, and the total weight was noted as W_1. The evaporating dish was then set up in a hot air oven set to 50 °C and left there until all of the liquid had evaporated. The cooled evaporating dish containing the solid material was then weighed and designated as W2. The solid content percentage (%) was computed using the formula $[(W_1-W_2) \div W_1] \times 100$ [25]

6. Surface tension measurement: This technique uses a stalagmometer and the drop count method. The strength of liquids' cohesive forces is gauged by surface tension. For instance, surface tension is higher in water due to its strong cohesive forces. However, liquids with weak cohesive forces, like benzene, have lower surface tension than water (168 Journal of

Pharmacognosy and Phytochemistry). The size of the drops that form decreases with the liquid's surface tension.

7. Skin Irritation Test: After washing, a prepared polyherbal anti-dandruff shampoo was applied to the skin for five minutes to check for inflammation or irritation.

8.Washability: Wash your hands after applying of shampoo to hand [25]

Fig no 12 :Washability

9.Wetting Time: A substance's wetting time depends on its concentration. Although Drave's test is the official one, the canvas disc method is typically employed because it is simple and time-efficient. The stopwatch began when a disc of smooth-surfaced canvas paper was placed on top of the herbal shampoo solution. The wetting time was defined as the amount of time needed for the disc to start sinking [26]

RESULT :

Fig no :13:Herbal Shampoo from cow urine

Table no :2 :Formulation table [27]

Sr.no	Ingredients	Quantity
1.	Cow urine	1 lit
2.	Reetha	50 gram
3.	Shikekai	50 gram
4.	Amla	50 gram
5.	Hibiuscus oil	2 leaves and 2 flowers
6.	Coconut oil	1/2 lit
7.	Neem	50 gram
8.	Rose oil	Q.S

9.	Banayan roots	10 gram
10.	Coffee	10 gram
11.	Kadhipatta	50 gram
12.	Honey	2 ml
13.	Turmeric	5 gram
14.	Lemon juice	5 ml

Table no :3 :Evolution parameters [28]

Sr.no	Evolution test	Result
1.	Physical appearance	Yellow colour, Aromatic odour, Smooth appearance
2.	PH	7.23±0.25
3.	Dirt dispersion	Light
4.	Foaming ability and foaming stability	20 ml and stable for more than 5 mins
5.	Percentage of solid contents	22.5%
6.	Measurement of surface tension	40.45 dyne/cm
7.	Skin Irritation Test	Non -irritant
8.	Washability	Easily Washable
9.	Wetting time	80 sec

DISCUSSION :

The purpose of this study was to determine how the various chemicals in shampoos affect the results they yield. Numerous physicochemical tests, including foam volume, pH, and percentage of solid ingredients, were conducted to determine the shampoos' effectiveness. Tests of physical attributes such color, odor, and foam type were also conducted [29]

CONCLUSION :

According to the current investigation, a herbal shampoo made with cow urine as a basis showed good physicochemical qualities, including pH, foaming capacity, stability, and cleansing efficacy. The formulation produced a respectable foam volume and stability that was on par with commercial shampoos, demonstrating good wetting and detergency capabilities. In

addition to its cleansing properties, cow urine's intrinsic bio-enhancer and antimicrobial properties also provided extra therapeutic advantages like antibacterial and antifungal activity. Overall, the findings imply that herbal shampoo made from cow pee can be a safe, economical, and environmentally responsible substitute for synthetic shampoos, with additional therapeutic and aesthetic advantages. It is advised that more thorough research be done to determine its potential for widespread commercialization, including microbiological efficacy and consumer acceptance tests [30]

ACKNOWLEDGEMENT :I want to sincerely thank our principal and my mentor, Mrs. Sancheti V.P., for their crucial advice, support, and helpful criticism during this research. Additionally, I would like to thank my closest friend Mr. Sagar Vaidya Sir, and Mr. Rushikesh Garad Sir, as well as my counselor and lab technicians at the JES SND Institute of Pharmacy Babhulgaon, for their technical assistance and laboratory facilities. I am appreciative of my family for their moral support and understanding throughout this task. Lastly, I would want to thank all of the collaborators and volunteers whose assistance made this study possible.

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