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MULTIMEDICATED HAIR OIL

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ABSTRACT

The concept of beauty and cosmetics is as ancient as mankind and civilization. So, they use various beauty products that have herbs to look charming and young. Herbal cosmetics are nowadays widely used by the common people because of the concept of fewer side effects and with a better safety and security profile. The present work was aimed to formulate herbal oil for general purpose (application in hairs) using various herbs. The formulated herbal oil was evaluated and various parameters such as viscosity, saponification value, pH, etc. were determined and are reported in this project.

Keywords: - Cosmetics, Herbs, Herbal hair oil, Evaluation



INTRODUCTION

Herbal hair oil is a traditional Ayurvedic recipe for healthy and shiny hair^[1]. It's natural ingredients make it perfect for hair growth and deep nourishment. It boosts blood circulation to the scalp, stimulating it and triggering hair growth. The boosted blood circulation ensures better nourishment for hair follicles, resulting in healthy hair growth. Herbs help in hair growth and make them smooth, silky and healthy, giving hair strength and luster. Herbal hair oils are one of the most well-recognized hair treatments. Herbal hair oil not only moisturizes the scalp, but also reverses dry scalp and dry hair condition. It provides numerous essential nutrients required to maintain normal functions of the sebaceous gland and promote natural hair growth. Keeping this point in consideration the present work was undertaken^[1]. The following main ingredients were used.

1. Onion (Onion plant, Alliaceae)

Chemical Composition: Onion contains protein, sugars, cellulose, minerals, a fixed oil, essential oil, and over 80 percent water. It contains the aromatic and tear-producing properties caused by sulfides which are produced by the reaction of the enzyme alliinase on an amino acid^[10].

Uses: They are very good at hair follicle nourishment and help restore lost nutrients to your scalp. They are rich in Sulphur, which is known to minimize breakage and thinning. They have potent anti-bacterial properties and help fight infections of the scalp. It helps to reduce hair fall as scalp infections. They are naturally potent antioxidants^[10].

2. Lemon Bulb (Citrus fruit, Rutaceae)

Chemical Composition: Lemons are a rich source of vitamin C, providing 64% of the Daily Value in a 100 g serving (table). polyphenols, terpenes, and tannins.^[14] Lemon juice contains slightly more citric acid than lime juice (about 47 g/l)^[10].

Ingredients: 1 lemon, olive oil

Uses: Promote hair growth, the antimicrobial properties will assist with any latent fungus, while acne and dandruff will find relief from its antiseptic benefits^[11].

3. Lemon Grass (Indian Melissa oil, Graminae)

Chemical constituents: Mainly contains citral and citronellal (75-85%), Geranio, Nerolinalool, Methyl heptanol, Limonene The β -lonone is used as a precursor of vitamin-A^[10].

Ingredients: 2 or more lemongrass stalks. Fine cheesecloth Mortar and pestle or rolling pin. Carrier oil (virgin coconut oil, olive oil, almond oil, grape seed oil or any unscented natural oil), Two-quart jars, Dark-colored glass containers with lids^[10].

Uses: Lemongrass oil is one of the beneficial essential oils that help regrow hair by addressing any scalp issue that is affecting healthy hair growth such as eczema, dandruff, and psoriasis. Boosts hair strength.

4. Mustard (Mustard, Cruciferae)

Chemical Constituents: The black mustard seed contains a thioglycoside *i.e.*, a β -glucopyranoside termed as sinigrin. Mustard oil has about 60% monounsaturated fatty acids (42% erucic acid and 12% oleic acid); it has about 21% polyunsaturated fats (6% the omega-3 alpha-linolenic acid and 15% the omega-6 linoleic acid), and it has about 12% saturated fats^[10].

Uses: Nourisher for Hair, Natural Conditioner, Promotes Hair Growth, Anti-Fungal Properties^[1].

5. Neem (*Melia Azadirachta*, Meliaceae)

Chemical composition: Seeds contain the highest concentration of Azadirachtin. salannin, gedunin, azadirone, nimbin, nimbidin, nimbecidine, nimbin, etc are other important limonoids of neem^[10].

6. Nirgundi (*Vitex incisa* Lam, Verbenaceae)

Chemical composition: The principal constituents of the leaf juice are casticin, isoorientin, chrysophanol D, luteolin, p-hydroxybenzoic acid and D-fructose. The main constituents of the oil are sabinene, linalool, terpinen-4-ol, β -caryophyllene, α -guaiene, and globulol constituting 61.8% of the oil^[10].

Materials: Nirgundi leaves-25 gm, Olive oil-25 ml, Water-25 ml. **Uses:** Aids in Hair Growth: The oil made from the leaves of this tree can be used as a hair tonic. Regular application is known to rejuvenate the hair, prevent hair fall, and promote hair growth^[1].

7. **Hibiscus** (*Bombacodendron* Hassk, Malvaceae)

Chemical constituents: *Hibiscus rosa Sinensis* contained tannins, anthraquinones, quinines, phenols, flavonoids, alkaloids, terpenoids, saponins, cardiac glycosides, protein, free amino acids, carbohydrates, reducing sugars, mucilage, essential oils, and steroids. *Hibiscus rosa Sinensis* contained cyclopropanes, methyl stercolate, methyl-2-hydroxy stercolate, 2-Hydroxy stercolate, malvalate and beta-sitosterol^[10].

Uses: Boosts Up Hair Growth. Thwarts Premature Graying and Ageing. Excellent for Treating Dandruff. Makes Hair Thicker and Stronger.

8. **Garlic** (*Allium Sativum*, Liliaceae)

Chemical constituent: The major components in the essential oils were sulfur-containing compounds allyl methyl trisulfide (7.9–13.2%), allyl (E)-1-propenyl disulfide (7.9–12.5%), dimethyl trisulfide (4.3–17.4%), diallyl disulfide (4.4–12.2%), diallyl trisulfide (2.8–10.5%), and methyl (E)-1-propenyl disulfide (2.6–12.5%)^[10].

Uses: Garlic oil contains numerous nutrients that help boost hair growth and improve its texture. These nutrients also help fight against many diseases of the scalp. Warm-up garlic oil slightly and apply it to your hair and scalp.

9. **Jasminum officinale** (Oleaceae)

Chemical composition: The main chemical components are benzyl acetate, linalool, benzyl alcohol, indole, benzyl benzoate, cis-jasmone, geraniol, methyl anthranilate and trace amounts of p. cresol, farnesol, cis-3-hexenyl benzoate, eugenol, nerol, ceosol, benzoic acid, benzaldehyde, γ -terpineol, nerolidol, isophytol, phytol, etc.

Use: Hair will feel fragrant because the jasmine fragrance lingers even after the wash. It helps strengthen the roots of the hair, making your hair stronger and less prone to

breakage. Jasmine oil is a strong antiseptic. It helps fight any microbial infection in the scalp, especially dandruff.

10. Olive Oil (*Oleum olivae*, Oleaceae)

Chemical constituents: Glycerides of oleic acid, Palmitic acid, stearic acid, linoleic acid, and arachidic acid.

Use: Olive oil is wonderful for hair care you get long and thicker hair faster repairing the damaged hair, from preventing dandruff, fungus.

11. Camphor (Japan camphor, Lauraceae)

Chemical constituents: camphor, linalool, 1,8-cineole, nerolidol, safrole, and borneol. In their odour.

Ingredients: Coconut Oil – 25ml, Camphor -5 gm.

Uses: For stronger hair, Stress, bad nutrition and pollutants can make hair weak. Camphor oil can reverse the damage.

12. Grape seed oil

Grape seed oil may improve the condition of your hair and scalp. If you have dandruff, which is often caused by a dry scalp, applying emollient grape seed oil to your scalp can help loosen dead skin and restore moisture. Some natural oils including olive oil and coconut oil are good for your hair, but they leave it feeling greasy and weighed down. Grape seed oil is lightweight and doesn't have that effect. When applied to your hair, grape seed oil adds moisture, strength, and shine. Try massaging a couple of tablespoons of grape seed oil (using more or less, depending on the length of your hair) into your hair and scalp before shampooing. Grape seed oil is used as a natural remedy for baldness. Linolenic acid is thought to stimulate hair growth. The oil contains flavonoids called procyanidin oligomers. These are powerful antioxidants. In vitro and in vivo studies show procyanidin oligomers may induce hair growth, but more research is needed.^[10]

MATERIALS AND METHODS

Onion oil

Procedure:

Heat 250 ml virgin coconut oil in a pan. After 5 minutes add onions. Heat after 5 mins add curry leaves. Heat for next 15 mins. Add castor oil/ almond oil/ olive oil for further improvisation. Castor oil is said to improve the length of the hair and split ends. Almond oil provides Vit. E and nourishment to the scalp. Olive oil for getting voluminous hair. Let it cool down and then filter the oil with the help of a sieve. ^{[1][4]}

Lemon Bulb oil

Procedure:

Grate the outside of the lemon over a bowl. Fill a small glass bottle halfway with the grated lemon zest. Fill the rest of the bottle with olive oil. Set the bottle on a windowsill or somewhere else that gets a lot of sun. Leave it there for a few days, but shake the bottle a few times per day. Store lemon oil in an airtight container at room temperature. ^{[1][4]}

Lemon Grass oil

Procedure:

Get two lemongrass stalks and crush them using the mortar and pestle. This will help release the oil. A rolling pin is an effective substitute if you don't have a mortar and pestle. Place the crushed stalks inside the jar and add carrier oil until stalks are covered. Seal the jar with an airtight lid and place in a sunny location for two days.

Make sure that the spot gets enough sunlight and heat throughout the day. After two days, strain the lemongrass oil using cheesecloth. Repeat step 1. Add the crushed stalks to the second jar, and then place back under the sun for two more days. ^{[1][4]}

Mustard oil

Procedure:

Take a bowl of mustard seeds. Remove all dirt in it. Take one cup of carrier oil. This could be coconut oil, almond oil, etc. bring it to boil in a pan. Put the mustard seeds in, let it boil till brown. Cool it and store it in a bottle. It would be better to store it in the refrigerator.

[1][4]

Neem oil

Procedure:

Wash neem leaves and, again, remove the excess water with a paper towel or just let it evaporate in a natural way. Pour a generous amount of coconut oil into a saucepan and heat it on the kitchen fire. Coconut oil is slightly milky when it's cold but loses this color while being heated. You need to heat it until it's completely transparent. In the meanwhile, grind the neem leaves with the help of a blender or a grinder. You will receive a thick paste with particles of leaves and stems. When the oil is transparent, add the neem paste and stir immediately. Let the mixture boil, stirring it constantly and thoroughly. When it boils, reduce the fire and keep on cooking for several minutes more. When you can see that the liquid in the saucepan is green, turn the fire off this is how you can receive the neem infused coconut oil easily. [1][4]

Nirgundi oil

Procedure: First I have collected nirgundi leaves. Then measured 25 gm of leaves on weighing balance & then also 25 ml water measured with the help of measuring cylinder. Measured nirgundi leaves & water added in the mixer and crushed. Then leaves and water mixture Sieved through cotton cloth. Took open vessel & poured olive oil in it & then heated up to 5 minutes. Then the sieved extract of leaves & water is added in olive oil. This mixture is heated daily for 15 to 20 minutes for three days. While heating, water was evaporated from the oil. Remaining oil is again sieved through cotton cloth. Rested it for 15 minutes to cool down and then after cooled oil was filled into bottle. [1][4]

Garlic oil

Procedure:

Crush 4 cloves of garlic directly into a saucepan and pour in the olive oil. Squeeze the cloves of garlic through a garlic press directly into the pan. Stir the garlic and the $\frac{1}{2}$ cup (120 ml) of olive oil together so the garlic is evenly distributed in the pan. Heat the mixture over medium-low heat for 3 to 5 minutes. The heat helps infuse the flavor of the garlic into the oil. Cook the mixture, stirring it occasionally until the garlic is light brown and slightly crispy.^[3] Remove the pan from the heat and pour the mixture into a container. Let the mixture cool completely before placing the lid on the airtight container and sealing it tightly. This prevents excess moisture from gathering in the container and spoiling the oil. Keep the oil in the refrigerator for up to 5 days.^{[1][4]}

***Jasminum officinale* (Oleaceae) oil**

Procedure:

Place 1/4 cup of jasmine flowers. Place the flowers into a glass jar and pour 1 cup of extra virgin olive oil over them. Seal the jar and shake well. Leave the oil aside for 48 hours for the flowers to steep. After 48 hours, strain the oil and discard the flowers. Pour the oil into a dark glass container and store it in a cool, dark place until needed.^{[1][4][2]}

Camphor oil

Procedure:

The preparation given here is based on the traditional Ayurveda method. This oil will be pale green apart from the camphor oil available in the market which is transparent. 25 ml of coconut oil and it should be heated until all the water content is evaporated. Now filter the content and pour it into a dry vessel with 5gm of powdered camphor. Stir it continuously until the camphor dissolves into the oil. Let it cool down and then transfer it into a dry glass bottle.^{[1][4]}

Grapeseed oil purchased from the market.

Formulation of herbal hair oil^{[1][4][11]}

Table No. 1: Ingredients used in the formulation of herbal hair oil (formulated)

S. No.	Ingredients	Quantity
1	Onion oil	10ml
2	Lemon Bulb oil	10ml
3	Lemongrass oil	10ml
4	Mustard oil	10ml
5	Neem oil	10ml
6	Nirgundi oil	10ml
7	Hibiscus oil	10ml
8	Garlic oil	10ml
9	Jasmin oil	10ml
10	Olive oil	10ml
11	Camphor oil	10ml
12	Grape seed oil	10ml

Evaluation of herbal hair oil^{[1][4][2]}:

The formulated herbal hair oil was subjected to physical and biological evaluation.

Sensitivity test: The prepared herbal hair oil was applied on 1 cm skin of hand and exposed to Sunlight for 4-5 min.

Acid value: Preparation of 0.1 molar solution: Weighed 0.56 g KOH pellets and dissolved in 100 mL of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in the burette. Preparation of sample: Measured 10 mL oil and dissolved in 25 mL of ethanol and 25 mL of ether mixture and shaken. Added 1 mL of phenolphthalein solution and titrated with 0.1 molar KOH solution.

Saponification value: Accurately weighed 1 mL of oil into 250 mL of the conical flask and 10 mL of ethanol: ether mixture (2: 1) was added. To this flask 25 mL of 0.5 N alcoholic, KOH was kept the flask for 30 min. and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly, the

blank titration was performed without taking oil (sample). The amount of KOH in mg used was calculated.

PH: The pH of herb

Primary skin irritation test ^{[1][2][10][3][4]}:

Healthy male rats weighed 200-250g were selected for the study. When during the test period 24 hrs before the test. The hair from the back of each rat of 1cm*1cm was shaved areas, which could accommodate the test site was cleaned with surgical spirit. 1 mL quantity (5% w/w) of the herbal formulations (HO) was applied over the respective test sites of one side of the spine.

Viscosity: The viscosity was determined using Ostwald's viscometer.

Specific gravity: Take the specific gravity bottle, rinsed it with distilled water, dry it in the oven for 15 minutes, cool, closed it with cap and weigh it (a). Now fill the same specific gravity bottle with the sample and closed it with cap and again weigh it (b). Determine the weight of the sample per milliliter by subtracting the weight (b-a).

Density^[c]:

The density of the material is defined as its mass per unit volume. It is determined by following formula Density= mass of oil/volume of oil in Specific gravity bottle.

Table No. 2: Evaluation of herbal hair oil (formulated)

S. No.	Parameter	Inference
1.	Specific gravity	1.096
2.	Viscosity	31.22
3.	Acid value	4.5
4.	Saponification value	115.05
5.	pH	6.8
6.	Sensitivity test	No irritation
7.	Irritation test	No irritation
8.	Grittiness	Smooth

Table No. 3: Role of herbs in herbal hair oil (formulated)

S. No.	Ingredients	Importance
1	Onion	Hair growth
2	Lemon	Anti-Dandruff
3	Lemongrass	Cure Hair loss
4	Mustard oil	Blood circulation n scalp hair growth
5	Neem	Hair growth Anti-Dandruff
6	Nirgundi	Hair Growth
7	Hibiscus	
8	Garlic	Hair Growth
9	Jasmin	Antiseptic
10	Olive oil	Hair Growth Anti-Dandruff Anti-fungus
11	Camphor	Hair growth
12	Grape seed oil	Vit E.

Table No. 4: Evaluation of formulated hair oil

Sr. No.	Evaluation Test	Formulated Hair Oil
1	Sensitivity test	No irritation
2	Acid value	4.4
3	Saponification value	111.03
4	pH	6.7
5	Viscosity	0.94
6	Specific gravity	1.082

RESULTS AND DISCUSSION

Herbal hair oil is one of the most well-recognized hair treatments. Herbal hair oil not only moisturizes scalp but also reverses dry scalp and dry hair conditions. It provides numerous essential nutrients required to maintain the normal function of sebaceous glands and promotes natural hair growth. The herbal hair oil was prepared from various herbs (Table 1) and their importance in the formulation is presented in Table 2. The various parameters like sensitivity test, viscosity, pH, irritation test, grittiness test, saponification value and an acid value of herbal hair oil was evaluated (Table 3). Hence, from the present investigation, it was found that the formulated herbal hair oil has optimum standards and further standardization and biological screening establishes the efficacy of formulated herbal hair oil.

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