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Onion Peel Oil: Traditional Touch to The Scalp

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ABSTRACT:

The onion peel hair oil are hair care components implemented to the hair for the treatment of alopecia. The present study is about the formulation and evaluation of hair oil using various plant material. This hair oil was prepared for the hair growth. The formulated oil contains different herbal plant which are traditionally utilized for hair growth plants used are onion peel, coconut oil, curry leaves, neem, hibiscus, amla, fenugreek seed. The prepared onion peel hair oil evaluated different parameters such as pH, density, viscosity, organoleptic properties, acid value, saponification value, phytochemical screening. The primary irritation test is carried out. Henceforth the onion peel hair oil considered to treat alopecia and increasing hair growth, reduce hair loss and reduce the dandruff.

KEYWORDS: Alopecia, onion peel, Hair growth, Dandruff, Herbal plant, Neem, Phytochemical screening, pH, Viscosity.

1. INTRODUCTION:

Hair is an epidermal derivative which is one of the vital parts increasing the overall elegance of the body. Hair fall, dandruff, lice, spilt ends, grey hair are few problems involved with hair faced by human. To overcome these problems, human takes many precautionary measures by applying many cosmetics. In which Hair oil is one among them, used to solve almost all of these problems. Herbal cosmetics are in high demand due to the increasing interest of mankind towards them, because they are more effective with nil or less side effects, easily available ingredients etc. Herbal hair oil is more preferred and is used in many ailments of hair. They promote hair growth, improve elegance of hair and prevent hair fall. Hair oil not only promotes hair growth they also provide necessary moisture to the scalp rendering in beautiful hair. The Onion Peel Hair Oil Formulation are showing anti- hair fall property with Some of other beneficial activities like Anti-dandruff Activity. It also Improves blood circulation to the scalp and Roots, Reduce hair pigmentation, Anti-fungal activity, Anti-hair fall property, Hair growth activity, And Treat Alopecia.

2. MATERIALS AND METHODOLOGY:

A proper method has to be carried out while formulating the onion peel oil

A. Selection of active ingredients.
B. Collection of active ingredients.
C. Extraction method of Onion peel.

D. Formulation of onion peel oil.
E. Evaluation of onion peel oil.
F. Result.

1) ONOIN PEEL:

- **Kingdom**: Plantae
- **Order**: Asparagale
- **Family**: Amaryllidaceae
- **Genus**: Allium
- **Species**: Allium cepa
- **Botanical Name**: Allium cepa l.
- **Biological source**: The dry outer peel of the onion (Allium cepa)
- **Geographical Source**: Onion are cultivated worldwide, particularly in temperate regions. Major producing countries including China, India and the United States
- **Chemical Constituents**:
  - ✓ Flavonoids (such as quercetin)
  - ✓ Phenolic compounds (such as kaempferol)
  - ✓ Saponins
  - ✓ Alkaloids (e.g., alliin, which is a precursor of allicin)
  - ✓ Essential oils
  - ✓ Tannins
  - ✓ Vitamins (vitamin C, vitamin B6)
  - ✓ Minerals (such as potassium and sulfur
- **Benefits for hair:**

✓ It prevents breakage and thinning of hair, regrowth of hair follicle, it prevents the premature grying of hair. It have Antioxidant capacity could be beneficial treating problems.

Fig No-01 Onion Peel

2) HIBISCUS:

- **Kingdom**: plantae
- **Order**: Malvales
- **Family**: Malvaceae

- **Genus**: Hibiscus
- **Species**: Hibiscus rosa-sinensis (Commonly Known as the Chinese hibiscus, through many sprcies of Hibiscus exist)
- **Botanical Name**: Hibiscus rosa-sinersis (For the most commonly referenced species)
- **Biological Source**: The flowers leaves and stems of the hibiscus plant are commonly used
- **Geographical Source:** Hibiscus is native to tropical and subtropical regions of the world, particularly in asia, Africa: and the Pacific Island
- **Chemical constituents:** Hibiscus contains several bioactive compounds, including:
    - ✓ Anthocyanins (which give the flower its color
    - ✓ Flavonoids
    - ✓ Organic acids (such as citric acids)
    - ✓ Polysaccharides
    - ✓ Tannis
    - ✓ Amino acids
    - ✓ Vitamin

Fig No-02 Hibiscus

- **Benefits for hair:**
    - ✓ Hibiscus for hair is highly beneficial in treating oily scalp issues such as dandruff and itchiness due to its astringent properties.
    - ✓ Hibiscus for hair has been traditionally used as a natural colour to mask grey hair.
    - ✓ Hibiscus tea for hair growth.
    - ✓ Hibiscus stop hair fall.

3) FENUGREEK:

- **Kingdom:** Plantae
- **Order:** Fabales
- **Family:** Fabaceae
- **Genus:** Trigonella
- **Species:** Trigonella frenum-graecum
- **Botanical Name:** Trigonalla frenum-graecum
- **Biological Source:** The biological source of fenugreek is the dried seeds of the pland Trigonella foenum-graceum.
- **Chemical constituents**:

fenugreek contains a variety bioactive compounds, including:

- ✓ Alkaloids (e,g., Trigonelline)
- ✓ Saponins (e.g., Diosgenin)

- ✓ Flavonoids (e.g.,Quercetin)
- ✓ Coumarins
- ✓ Tannins
- ✓ Glycosides
- ✓ Essential oils (e.g.,4-hydroxyisoleucine)
- ✓ Proteins (e.g. Amino,lectins)
- ✓ acids (e.g.,Lysine, Methionine)
- ✓ Fats (e.g.,fatty acids like linoleic acids)

Fig No-03 Fenugreek Seeds

- **Benefits for hair**:
  - ✓ Moisturizes hair and replenishes hair growth.

4) NEEM:

- **Kingdom**: Plantae
- **Order**: Sapindales
- **Family**: Meliacaeae
- **Genus:** Azadirachta
- **Species:** A.indica
- **Biological Source:** Neem consists of the fresh or dride leaves and seed oil of Azadirachta india J.Juss (melia Indica or M. Azadirachta Linn.)
- **Chemical constituents:**
  - ✓ The most important active constituents is azadirachtin and the others are
  - ✓ nimbolinin
  - ✓ nimbin
  - ✓ nimbidin
  - ✓ nimbidol
  - ✓ sodium nimbinate
  - ✓ gedunin, salnnin
  - ✓ quecrcetin

Fig No-04 Neem

- **Benefits for hair:**

✓ They posses Anti-fungal and Antibacterial properties, used for a dandruff-free Demane, cure scalp infection and dandruff, work womders for itchy and flaky scalps.

5) AMLA:

- **Kingdom:** Plantae
- **Order:** Geraniales
- **Family:** Euphobicaceae
- **Genus:** Emblica
- **Species:** officinalis gearth
- **Geographical source:** It is found in Maharastra ,Karnataka,etc
- **Biological source:** Emblica, Indian goose berry, amla. This consists of dried, as well as fresh fruits of the plant Emblica officinalis Gaerth (Phyllanthus emblica Linn.), belonging to
- **Chemical constituents:**

✓ Gallic acids
✓ Ellagic acids
✓ Vitamin C
✓ Tannis
✓ Flavonoids
✓ Phenolic acids

Fig No-05 Amla

- **Benefit for Hair**:
  - ✓ It reduce hair falls and prevent hair loss.
  - ✓ It helps in treating hair problems.
  - ✓ It helps in treating dandruff.

6) CURRY LEAVES:

- **Kingdom**: plantae
- **Order**: Sapindales
- **Family**: Rutaceous
- **Genus**: murraya. J. Koenig
- **Species**: M. koenigii .L.
- **Synonym**: bergera loenigii
- **Botanical Name**: murraya koeniggi
- **Biological Source**: Leaves
- **Geographical source**: Native to indi, srilanka and Southeast asia
- **Chemical constituents**:

✓ Alkaloids (e.g., murrayanine, koenimbine)
✓ Essential oils (e.g.,terpinene, linalool, pinene)
✓ Triterpenoids
✓ Carbohydrates and proteins

Fig No-06 Curry Leaves

- **Benefits for hair:**

✓ It is used to promote hair health.
✓ It potentially reducing hair fall.
✓ Improving scalp health.
✓ Due to antioxidant and Nutrients-rich properties.

7) COCONUT OIL:

- **Kingdom:** plantae
- **Order:** Arecales

- **Family:** Arecaceae / palmae
- **Genus:** Cocos
- **Species:** c. Nucifera
- **Biological Source:** Coconut oil derived from dried fruits of Cocos nucifera.
- **Geographical source:** It found in South India, west India.
- **Chemical Constituents:** it contains

✓ Capric acid
✓ Lauric acids
✓ Caprylic acid
✓ Fatty acids
✓ Palmitic aids
✓ Stearic acids
✓ Oleic acids
✓ Linoleic

Fig No-07 Coconut Oil

- **Benefits:**

✓ Coconut oil acts as moisturizing the air and reducing breakage.
✓ Help to grow your hair.
✓ It protects the hair from environmental damage like sun, wind.
✓ Hair loss prevention.

3. EXTRACTION METHOD:

Extraction method Onion peel powder using maceration process:

Take dried 10 gm onion peel powder fill the filter paper pouch in the Soxhlet apparatus and set the assembly and in the round bottom flask take 200 ml of ethanol they continue heating to the 7 to 12 hrs.in heating mantle to complete the cycle. After the complete cycle the extract is collected in round bottom flask. Remove round bottom flask and filter the extract using Whatman filter paper. After filtration we get the pure extract of onion peel.

Fig No-08 Soxhlet Apparatus

Extraction of onion peel using hot water (Aqueous method):

Collected dried onion peel and wash them to removing impurities from the peels. Then dry the peels completely and after the drying take half liter of water in the beaker add the dried onion peels into the water. Then boil the water for 30 to 40 min. then the extract is filter out using filter paper then we get the pure extract of onion peel.

Fig No-09 Extraction

TABLE NO-01 FORMULATION TABLE OF ONION PEEL OIL:

Sr.no	Ingredients	Formulation 1	Formulation 2
1.	Onion peel (extract)	20 ml	20 ml
2.	Coconut oil	100 ml	100 ml
3.	Hibiscus	5gm	5gm
4.	Curry Leaves	5gm	5gm
5.	Neem	5gm	5gm
6.	Amla	5gm	5gm
7.	Fenugreek seeds	5gm	5gm

4. **INGREDIENTS:**

Fig No-10 Ingredients

Preparation of onion peel Hair oil

The onion peel hair oil was prepared by collecting various plant material such as coconut oil, curry leaves, neem, fenugreek seeds, amla, hibiscus and onion peel extract. Where procured from natural sources. Accurately weigh all the dried and fresh herbs and are grind into fine form. Then directly boiled in the coconut oil for 40 to 50 min. Then oil is filtered through a muslin cloth. Makeup the volume with coconut oil. The oil prepared using simple traditional method

Second procedure for oil:

1) Accurately weigh the coconut oil and onion peel extract.
2) Add other ingredients curry leaves, neem, fenugreek seed, amla, hibiscus as it is (do not grind into fine form.)
3) Boil for the 40 to 50 min.
4) Fiter the oil using muslin cloth.
5) Make up the volume with coconut oil.

Evaluation of onion peel hair oil:

The formulated hair oil was evaluated for parameters like organoleptic properties, pH, viscosity, acid value, saponification value, phytochemical screening. Calculation can shown be:

1) Acid value:

10ml of oil was added with 25ml of ethanol and 25ml of ether. Phenolphthalein was added as indicator and titrated with 0.1M potassium hydroxide solution.

Acid value = 5.61n/w.

Where, n= Number of ml of 0.1M KOH. W = Weight of oil.

Acid value- $\frac{5.06 \times 8.83 \times 0.1}{10 \text{ gm}}$

$$= \frac{4.46}{10}$$

= 0.446 for 10 gm

2) Saponification value :

2g of oil was accurately weighed and transferred into a 250ml iodine flask. 25ml of 0.5M alcoholic potassium hydroxide was added and boiled under reflux on a water bath for 30mins. Phenolphthalein was added as indicator and titrated against 0.5M HCl ('a' ml). Similarly blank was performed ('b'ml) without the sample.

Saponification Value: 28.05(b-a)/w

Were, Blank Titration:

3) pH:

pH of herbal oil was detected using pH meter.

4) Viscosity:

Viscosity was determined using Ostwald's viscometer. Specific gravity of the prepared oil was determined using pycnometer or specific gravity bottle.

5) Density:

The oil density is defined as the mass per unit volume at a specified pressure and temperature.

Density = mass/volume

6) Stability:

The stability hair oil was determined in various temperature condition like 25℃, 35℃, 45℃ for 15 to 30 days.

Organoleptic Parameters:

The organoleptic properties of formulated onion peel oil judged using color, odour, physical state, sedimentary and polarity.

TABLE NO-2 Phytochemical screening: images to be added

Alkaloids

Sr no.	Test	Observation	Inference
1	1 ml oil + few drops of mayers reagent	Yellowish color formed	Alkaloids present

Fig No-11 Test for Alkaloids

Flavonoids

Sr no.	Test	Observation	Inference
1	2 ml of oil + add 2 – 3 drops of NAOH	Deep yellowish color	Flavonoids present
2.	Oil is mixed with few ml ethanol and conc. HCL	Pink color formed	Flavonoids present

Fig No-12 Test for Flavonoids

Glycosides:

Sr no.	Test	Observation	Inference
1	Oil sample is mixed with few ml of H_2SO_4	Red color is developed	Glycosides present
2.	2 drops of oil sample is mixed with mercury acetate	Separate the drug acetate and mercury	Indicates glycosides present

Fig No-13 Test for Glycosides

Terpenoids:

Sr no.	Test	Observation	Inference
1	2 ml of oil is mixed with chloroform and conc.H_2SO_4	A reddish-brown color layer was formed.	Indicates presence of terpenoids

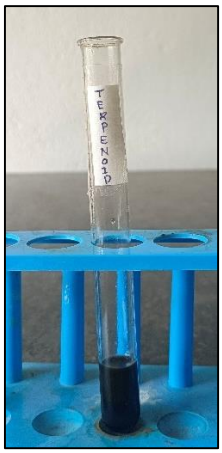

Fig No-14 Test for Terpenoids

Saponins:

Sr no.	Test	observation	Inference
1	The oil sample is mixed with few ml of water	White color foam is formed	Indicates presence of saponins

TABLE NO 03-Organoleptic properties:

Sr.No	PARAMETER	OBSERVATION
1	Color	Greenish yellow
2	Oduor	Characteristic
3	Physical state	Liquid with greesy in nature
4	Sedimentation	No sedimentation
5	Polarity	Non polar

TABLE NO-04 Phytochemicals evaluation of onion peel hair oil:

Name of the test	Result
Alkaloids	+ve
Flavonoids	+ve
Glycosides	+ve
Terpenoids	+ve
Saponins	-ve

TABLE NO-6 Evaluation Parameters:

S. No	Parameter	Observations
1	Color	Greenish yellow
2	Odour	Characteristic
3	Irritancy	Non-irritant
4	pH	5.5
5	viscosity	
6	Density	0.90 gm/ml
7	Stability	Stable
8	Acid value	0.446
9	Saponification value	114.20

Microbiological Parameters:

Zone Of Inhibition Result:

Sr No	**Sample Marked As**	**Zone Of Inhibition(mm)**
		Organism Name -Trichophyton Ruburum
1	A	<0.1
2	B	<0.1
3	Standard	<0.1

mm-milimeter

Chemical Parameter:

Sr No	Parameter	Results	Unit
1	pH	5.56	-
2	Density	0.90	gm/ml

Fig No-15 Standard Sample

Fig No-16 Formulation 1 & Formulation 2

5. Conclusion:

The onion peel hair oil is one of the most well recognized for alopecia treatment. All the parameters showed that they are within the limits and as per the standards. Since all the ingredients added have many advantages, this oil will help in maintaining good growth of hair by promoting hair growth, turning grey

hair to black, hair fall, protects from dandruff, provide Shining, results in good looking hair, Treating dry scalp, Increasing scalp blood circulation.

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