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FORMULATION AND EVALUATION OF POLYHERBAL DRY SHAMPOO

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Abstract:

Hairs are the integral part of human beauty. People are using herbs for cleaning, beautifying and managing hair since the ancient era. Whereas the hair has been trimmed, shaped and even colored since the most ancient times, relatively little emphasis has been placed on the process of cleaning it. Only in this century has a real technology in the cleaning of the hair and scalp been developed. Now a days the specialized branded shampoos products for the hair and scalp, offered in multiplicity of types and forms. Now, washing the hair and scalp with shampoo has become a nearly universal practice.

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INTRODUCTION:

Shampoos are probably the most widely used hair products today, based on synthetic ingredients as well as herbal ingredients. Shampoos are of various types, like powder shampoo, clear liquid shampoo liquid shampoo, lotion shampoo, solid gel shampoo, medicated shampoo, liquid herbal shampoo etc. Dandruff is known to be controlled by fungi static ingredients in Anti-dandruff shampoos. Herbal formulation have growing demand in the world market.

The natural remedies are more acceptable in market because it's safe and fewer side effect antidandruff shampoo and nutritional shampoo containing vitamin, amino acids proteins hydrolysate.

The synthetic shampoo contains cationic, anionic and non anionic surfactant mix in this surfactant having good foaming character but its toxic and caused irritation of eye. Hard water the surfactants leave a deposit of sodium, calcium and magnesium salts on the hair shaft. So, these synthetic shampoos are found to have side effects like drying effect on the hair. These shampoos leave the hair too dry to handle (or) comb, to avoid these problems, herbal shampoos will be useful.

The herbal shampoo powder was formulated using natural ingredients with Onion Powder, Rose Petal, Lemon Grass, Flaxseed or Linseed,Brahmni,Shikakai, Feenu greek, Aloevera Powder, Tulsi, Neem, Hibiscus Flower, and Retha.

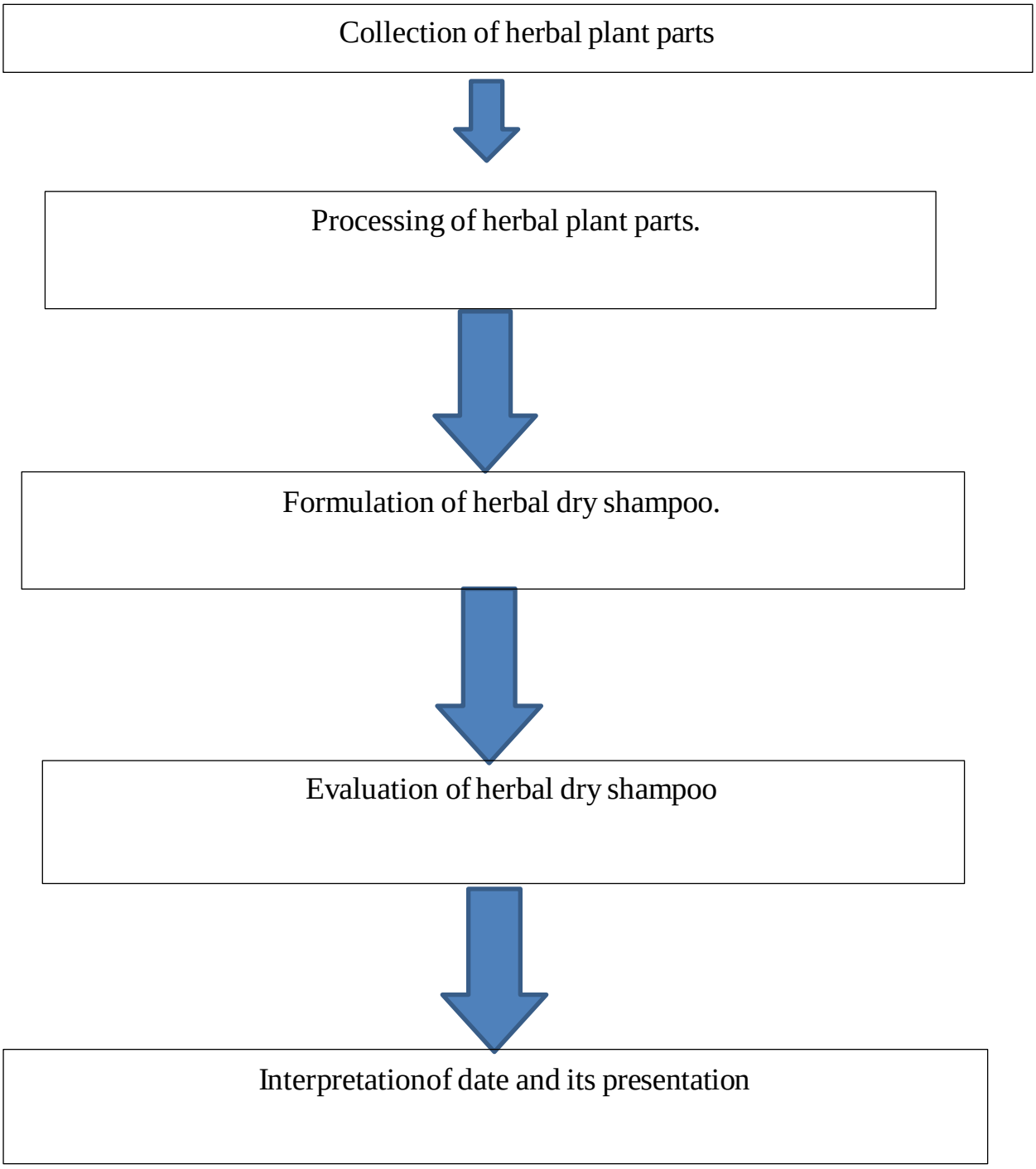
Advantages of Herbal Dry shampoos :-

- Dry herbal shampoo is a product to absorb the dirt, oil and grease of your scalp without washing it.
- Many people use it to freshen their hair after working out, a humid commute, extend the life of a blowout, etc.
- It can also be useful for people with disabilities who have a hard time taking showers without assistance.
- They can lengthen the time between regular shampoos. This is beneficial, since washing your hair too often can dry it out.
- By washing your hair less often, you also reduce the use of heating implements (e.g. hairdryer, curling or straightening iron) that can damage your hair.
- Dry shampoos often have a volumizing effect, which can help keep your hair styled longer.
- Wetting and shampooing hair makes coloured hair fade faster.
- They are useful when travelling or during a hospital stay.
- Herbal dry shampoo reduces hair greasiness without the need for water.

Disadvantages of Herbal Dry shampoos :-

- Using dry shampoos too abundantly or frequently can lead to an accumulation of residue that can give your hair a coarse texture.
- Overuse can also dry the hair by preventing natural oils from hydrating the hair, which can make it more brittle.
- Dry shampoo residue can block the pores of the scalp, which can cause inflammation or breakouts.

Experimental Work :-



MATERIALS AND METHODS :-

All the herbal drugs were procured from local market. The herbal shampoo powder was formulated using following natural ingredients, which are tabulated in Table

Table 1:-

Biological source and their uses of herbal ingredients:-

Formulation of herbal shampoo

Sr.no	Ingredient	Biological source or family	Uses
1.	Onion powder	It is derived from the plant Allium ascalonicum(Alliaceae)	Antiallergic, Antimicrobial, Expectorant.
2.	Rose petal	A rose is woodly perennial flowering plant of the genus Rosa (Rosaceace)	Fragrance,
3.	Amla	Dried ripe fruits of Embelica officinalis (Euphorbiaceae)	Hair growth promoter
4.	Neem	Dried leaves of Azadirachta indica (Miliaceae)	Antiseptic
5.	Tulasi	Dried leaves of Ocimum santum (Labiateal)	Antibacterial
6.	Shikakai	Dried seeds of Acacia rugate (Leguminesue)	Foam base
7.	Reetha	Dried fruits of Sapindus mukorossi (Sapindaceae)	Foaming agent.

Sr.No	Ingredient	Quantity (grams)	Purpose
1	Neem powder	7.5g	Antibacterial, dandruff
2	Reetha powder	10g	Natural cleanser
3	Tulsi powder	7.5g	Antiseptic, soothes scalp
4	Amla powder	12.5g	Strengthens hair, adds shine
5	Shikakai powder	12.5g	Natural cleanser, improves

Raw Material of Plant Profile:

Figure 1 shikakai powder

Figure 2 hibiscus

Figure 3 aloe vera powder

Figure 4 Neem powder

Preparation of herbal dry shampoo

- Sieve all powders separately to remove lumps and ensure a fine, smooth texture.
- Mixing: Combine all the measured powders in a clean, dry bowl. Stir thoroughly until the mixture is uniform.

(Optional): Add arrowroot powder or cornstarch (5g) to improve oil absorption. (Optional): Add 2–3 drops of essential oil (like lavender or tea tree), mixing well.

- Packaging: Store in an airtight jar or shaker bottle. Usage
- Sprinkle a small amount onto roots and scalp. Leave for a few minutes.
- Comb or shake off excess powder.

Evaluation of herbal shampoo powder :-

Prepared formulations of shampoos were subjected to following evaluation parameters.

Organoleptic evaluation:-

Organoleptic evaluation on the parameters like colour, odour taste and texture was carried out. Colour and texture was evaluated by vision and touch sensation respectively. The Colour was slightly reddish and texture was good. For taste and odour evaluation a team of five taste and odour sensitive persons was formed and random sampling was performed.

General powder characteristic :-

General powder characteristics includes evaluation of those parameters which are going to affect the external prop0erties (like flow properties, appearance, packaging criteria etc.) of the preparation, Characteristics evaluated under this section are powder form, particle size angle of repose and bulk density. Sample for all these evaluations were taken at three different level i.e. from top, middle and lower level.

Particle size :- Particle size is a parameter, which could affect various properties like spreadability, grittiness etc., particle size was determined by sieving method by using I.P. Standard sieves by mechanical shaking for 10 Min

Angle of repose :- It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow.

Funnel method:

Required quality of dried powder is taken in a funnel placed at a height of 6 cm from a horizontal base. The powder was allowed to flow to form a heap over the paper on the horizontal plane. The height and radius of the powder was noted and recorded the angle of repose (θ) can be calculated by using the formula.

Required amount of dried powder is placed in a cylindrical tube open at both ends is placed on a horizontal surface. Then the funnel should be raised to form a heap. The recorded. For the above two methods, the angle of repose (θ) can be calculated by using the formula.

$\Theta = \tan^{-1}(h / r)$

Where, Θ – Angle of repose, h – height of the heap, R – Radius of the base.

Bulk density :-

Bulk density is the ratio between the given mass of a powder and its bulk volume. Required amount of powder is dried and filled in a 50 ml measuring cylinder up to 50 ml mark. Then the cylinder is dropped onto hard wood surface form a height of 1 inch at 2 second interval. The volume of the powder is measured. Then powder is weighed. This is repeated to get average values. The bulk density is calculated by using the below given formula.

Tapped density:-

The tapped density is an increased bulk density attained after mechanical tapping a container containing the powder sample. After observing the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped for 1 min and volume or mass reading are taken until little further volume or mass change was observed. It was expressed in gram per cubic centimeter (g/cm3)

Compressibility / Carr's Index :-

This is calculated using the formula; Bulk density (Tapped) – Bulk density (Untapped) Carr's index = Bulk density (Tapped) – Bulk density (Untapped) Bulk density (Tapped)× 100 Bulk density (Tapped)

Hausner's Ratio:-

The formula used to determine Hausner's ratio we use bulk density and tap density ratio. For the determination of Hausner' ratio follow: Bulk density (Tapped) Hausner's Ratio = Bulk density (Tapped)Bulk density (Untapped) Bulk density (Untapped)Moisture content Moisture content in the formulation is very important as it contains herbs which are liable to be attacked by weather. 2gm of powder was taken and kept in an oven and dried up to two constant reading and % moisture content was Physicochemical evaluation :-

1)pH :-

pH of the pharmaceutical consideration as well as it affect the effect of shampoo on hairs.1gm of powder shampoo was taken and 9ml of distilled water was

added to it. pH of the resulting solution was calculated using pH meter at 370c. pH of herbal dry powder shampoo is alkaline (pH 7-8)

Washability:-

Formulations were applied on the skin and then ease and extent of washing with water were checked manually. Washability of prepared herbal dry powder shampoo was good.

Solubility:-

Solubility is defined as the ability of the substance to soluble in a solvent. One gram of the powder is weighed accurately and transferred into a beaker containing 100 ml of water. This was shaken well and warmed to increase the solubility. Then cooled and filter it, the residue obtained is weighed and noted. The solubility of Herbal Dry powder shampoo was good and the weight of residue is obtained 0.6g after completing the solubility test.

Skin irritation test:-

The skin irritation tests revealed that the herbal shampoo powder shows no harmful effect on skin. This is due to the absence of synthetic surfactants. Most of the synthetic surfactants produce inflammation of the eyelid and corneal irritation. But in this formulation of herbal shampoo powder, the uses of all ingredients are obtained naturally. So it does not produce any harmful effect on skin.

Ash value:-

Total ash content Ash value is calculated to determine the inorganic contents which is characteristic for a herb. About 2gm of powder drug was taken in silicon dish previously ignited and weighed. Temperature was increased by gradually increasing the heat not

RESULT AND DISCUSSION :-

Herbal powder shampoo was prepared using Onion Powder, Rose Petal, Shikakai, Aloevera Powder, Tulsi, Neem, Hibiscus Flower, Retha and corn powder in different compostion . These formulations were prepared using mixing in ascending order by weight and with continuous trituration. This preparation was evaluated organoleptically observing colour, odour, taste and texture. Results shows a faint brown colour.

Organoleptic evaluation or visual appearance

Sr.no	Test	Observation
1.	Colour	Slightly reddish
2.	Odour	Characteristics
3.	Texture	Fine and smooth
4.	Taste	Slight

General poweder characteristic

Sr.no	Test	Result
1.	Particle size	20-23nm
2.	Angel of repose	45°6”
3.	Bulk density	0.370 g/cm3
4.	Tap density	0.526g/cm3
5.	Compressibility / Carr’s Index	27.42
6.	Hausner’s Ratio	1.37

Physicochemical properties :-

Sr.no	Test	Result
1.	PH	5
2.	Washability	Easily washable
3.	Solubility	Insoluble in water
4.	Skin irritation test	harmfull effect effect on skin
5.	Ash value a . acid b. total ash count	0.21% w/w 5.5% w/w 10.5% w/w

6.	Stability study	Stable
7.	Moisture content	1.82% w/w

CONCLUSION:

Medicinal plants used in the formulation of herbal shampoo were found as rich source of novel drugs. These plants are Onion Powder, Rose Petal, Shikakai, Aloevera Powder, Tulsi, Neem, Hibiscus Flower, Retha, Amla powder and corn powder has been reported for hair growth and conditioning.

The various quality control parameters were checked. All parameter gives favorable result. The result obtained on present study shows that the active ingredients of these drugs when incorporated in shampoo gives more stable products with good aesthetic appeal.

The pH of the shampoo has been shown to be important for improving and enhancing the qualities of hair, minimizing the irritation to the eyes and stabilizing the ecological balance of the scalp.

The current trend to promote shampoos of lower pH is one of the minimizing damages to the hair. Such results are estimated out of a formulation to establish strong results for the usage and good results of the product.

Though the product is in dry form inspite has wonderful wetting capacity and being dry is very good for the storage. The evaluation parameters like Organoleptic evaluation, General powder Characters, Physicochemical Evaluation, Cleaning action, foaming, wetting agent, Nature of hair after wash was carried out and was found to be within the standard range

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