

Formulation And Evaluation of Herbal Hair Removal Powder

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Abstract- Herbal Hair Removal Powder are developed for natural and safe personal care depilatory product. The formulation and evaluation of herbal hair removal using plant based ingredients is studied here. The ingredients selected are Turmeric (*Curcuma longa*), Sandalwood (*Santalum album*), Rose (*Rosa rugosa*), gram flour, Edible gum, Orange peel powder and Rice flour. These natural products have been traditionally used for hair removal.

The formulation developed by blending powder of these ingredient. Evaluation was conducted based on organoleptic, physicochemical, phytochemical properties and tests conducted to assess its quality and efficacy. The results indicated that prepared herbal hair removal powder exhibited good depilatory action, ease of application and skin compatibility. This research objective is to replace chemical based depilators and support use of natural cosmetic formulations, promoting safer skincare options.

Keywords : Herbal Hair Removal Powder, Sandalwood, skincare.

INTRODUCTION

Hair removal has been an important part of human grooming. Various hair removal techniques, ranging from natural pastes and mechanical methods to modern chemical & laser treatments have developed. Hair removal powders emerged as popular choice as they have pain free application, ease of use & affordability. These depilatory powders work by breaking down the protein structure of hair and hence hair can be easily removed from surface of the skin. Other methods like Shaving- cuts hair at skin level, Waxing- removes hair from root but, Depilatory powders offer a non-invasive solution that removes hair without pain and irritation.

History of hair removal powder- Earlier it included use of herbal and mineral based pastes to achieve smooth skin. In ancient India, China, Egypt, natural ingredients like Chickpea flour, turmeric and alkaline minerals were mixed to create depilatory pastes. These formulations had effective hair removal & Skin-nourishing properties. Later composition of depilatory powders evolved with addition of chemical agents like Sodium hydroxide, Calcium thioglycolate that enhance efficiency of these products.

Today, hair removal powders are available in various formulations for different skin types. Some product include herbal extracts like neem, aloevera, sandalwood to minimize irritation. While other have Stronger chemical composition where concerns about sensitivity, allergies, long term effects remain important considerations for users.

ANATOMY OF SKIN:

Skin consists of three layers: the epidermis, dermis, and hypodermis.

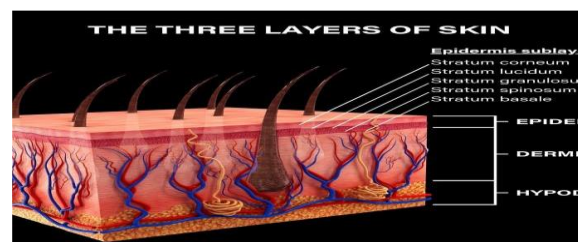


Figure : Anatomy of Skin

Epidermis- It is terminally differentiated, stratified squamous epithelium. The major cell is keratinocyte. It has four distinct layers: Stratum basal or Stratum germinativum, stratum spinosum, stratum granulosum & stratum corneum.

Dermis- It is formed by the Mesenchymal cells give rise to the whole range of blood, connective tissue cells, including fibroblasts and mast cells of the dermis and fat cells of the subcutis.

Hypodermis- It is the deepest layer composed of adipose tissue and connective tissue. It provides cushion for underlying tissues.

ANATOMY OF HAIR :

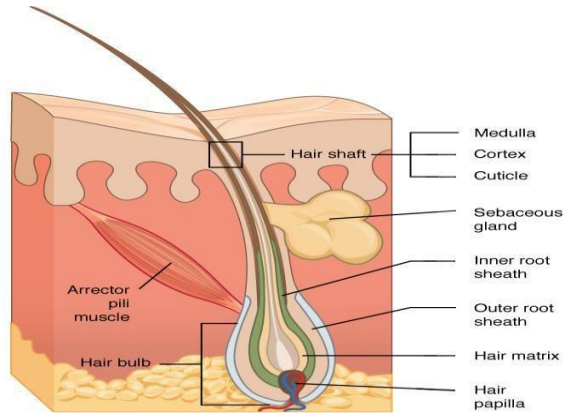


Figure Anatomy of Hair

Externally Hair is thin, flexible tubes of dead, fully Keratinized epithelial cells. Inside the skin, it is a part of individual living hair follicles, cylindrical epithelial down growths into the dermis & subcutaneous fat that enlarge at the base into the hair bulb surrounding the mesenchymal derived dermal papilla.

Hair structures: 1) Follicle- in the skin 2) Hair Shaft- on the body surface. It contains Cortex(have majority hair fibre), Cuticle cells, medulla (Central part).

The Hair Growth Cycle :

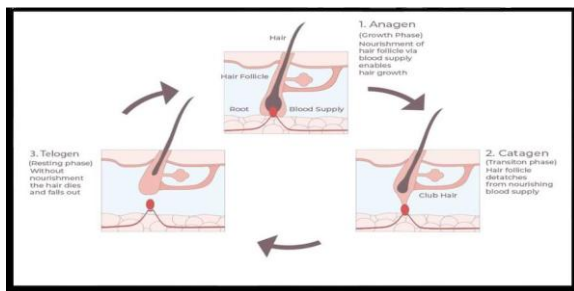


Figure: Hair Growth Cycle

It has three phases: anagen, catagen and telogen.

1. **Anagen Phase:** It is Active stage. Hair grows at an average 1cm every 28 days throughout this phase, this last between 2 and 8 years.
2. **Catagen Phase:** It lasts for 2 to 4 weeks. It is characterized by transitional phase in the hair, comes completely deteriorated by this point.
3. **Telogen Phase:** It is final phase, also called resting stage. This phase lasts for 2-4 months, marks the beginning of hair shedding. Hair falls out on its own or is pulled out during this phase.

Hair Distribution on Body:

Body hair / androgenic hair is a type of terminal hair that appears at puberty. At puberty vellus hair-bearing parts of their body frequently start to sprout darker, thicker body hair. Leg, arm, chest, and back hair all start out as vellus hair, just like most of the hair on the human body.

Hair REMOVAL METHODS

Epilators, tweezing, waxing, sugaring, threading, and taking medicine are some epilation techniques.

1. Plucking:

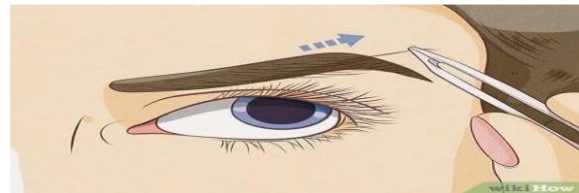


Fig. Plucking Method

Plucking of hair using tweezers in small regions is temporary solution for elimination of terminal hairs rather than vellus hairs tends to break close to the skin,s surface.

2. Threading:



Figure: Threading Method

Pulling of hair by applying a twisted cotton thread loop, held in place by teeth and the fingers, to the skin. Removal of hair on cheeks, ears, and foreheads, i.e,

facial hair is done by this method. Most commonly used for shaping eyebrows.

3. Waxing:



Figure: Waxing Method

Wax made from Bees wax, rosin and chemicals, preservatives, essential oils is used for hair removal. Hot wax is mostly preferred over cold wax due to dilation of follicular opening that make easy hair removal.

4. Sugaring:



Figure: Sugaring Method

It involves application of a paste of sugar, lemon juice & water to skin in the direction of hair growth and removal in opposite direction with the help of a towel. This is old method from middle East and Egypt.

5. Lasers:



Figure: Laser Method

This is famous method for permanent hair removal and is very expensive.

6. Hair Removal Sprays: These are used for mess free and rapid hair removal

SIDEEFFECTS OF CHEMICAL DEPILATORS :

1. Skin irritation and burns
2. Allergic Contact Dermatitis
3. Skin Damage
4. Erythema (redness)
5. Edema (swelling)
6. Skin Rash

Serious Sideeffects such as:

1. Eye Damage
2. Respiratory Issues
3. Hypersensitivity

Definition of Herbal Hair Removal Powders:

Herbal Hair Removal Powders are natural depilatory powders that are topical formulations designed to remove unwanted hair by breakdown of structural integrity of keratin, the protein that forms hair. These powders contain herbal ingredients that work to weaken the hair shaft, allowing it to be easily wiped away.

HERBAL HAIR REMOVAL POWDER FORMULATION

INGREDIENTS & PROPORTION FOR HERBAL HAIR REMOVAL POWDER 20g:

1. Turmeric Powder – 2g
2. Multani Mitti (Fuller’s Earth) – 2g
3. Rice Flour – 2g
4. Chickpea Flour – 2g
5. Edible Gum (Astragalus gummifer) – 10g
6. Orange Peel Powder – 1.5g
7. Rose Petal Powder – 0.5g

Common name and scientific name of Ingredients	Role
Fuller’s Earth Multani Mitti Powder	<ol style="list-style-type: none"> 1. Reduce fine lines 2. Unclogs skin pores 3. Stop pigmentation 4. Prevent acne

	5. Glowing Skin
Rice Flour Powder (Oryza sativa)	1. Exfoliate Dead skin 2. Trap hairs and create abrasion on skin surface to remove hair 3. Fights Ageing 4. Repairs skin 5. Skin Brightening & Skin Tightening.
Turmeric Powder(Haldi) (Curcuma longa)	1. Hair Growth Reduction & Exfoliation 2. Anti-inflammatory & Antibacterial properties
Chickpea flour (Besan)	1. Weakens hair follicle over time 2. Gentle Exfoliant (abrasive effect on skin's surface) 3. Reduce hair growth
Edible Gum (Gond Katira) (Astragalus gummifer)	1. Thickener & Stabilizer 2. Adhesive property 3. Removal of Hair 4. Revitalize dull skin
Orange peel powder (Citrus sinensis)	1. Skin-healing (astringent property) 2. Radiant glow 3. Reduces pores 4. Stop skin damage & de-tan skin 5. Anti-ageing of skin
Rose petal powder (Rosa rubiginosa)	1. Antioxidants 2. Skin toner 3. Cleanse pores and moisturize the skin 4. De-tan skin

PREPARATION METHOD

1. Weigh each ingredient accurately using a digital scale.
2. Sieve all powders separately to remove lumps and ensure a fine texture.
3. Mix all ingredients thoroughly in a dry, clean container until uniform.
4. Store in an airtight container in a cool, dry place to prevent moisture absorption.

HOW TO USE

1. Take the required amount of powder and mix it with rose water, milk, or yoghurt to form a smooth paste
2. Apply the paste evenly to the desired area and let it dry for 10-15 minutes.
3. Gently scrub off or peel off the dried paste in the opposite direction of hair growth.
4. Rinse with lukewarm water and moisturize the skin.

STORAGE & SHELF LIFE

Storage-

-Store in an airtight container away from moisture and direct sunlight

Shelf life: 6-12 months if stored properly.

Mechanism of Action:

After applying hair removal powder by forming a paste by adding water to it, dissolution of keratin structure occurs due to active ingredient reacting with hair protein. After 15 minutes the mask is formed after drying the applied paste and it is removed by pulling off or scrubbing off this mask and hair can be removed due to adhesive property of the formulation.

ADVANTAGES OF HERBAL HAIR REMOVAL POWDER :

- 1) No Risk of Cuts or Razor Burns
- 2) Pain-Free Application
- 3) Suitable for Large Areas
- 4) Cost-Effective
- 5) No Ingrown Hairs
- 6) Smooth Finish

EVALUATION OF HERBAL HAIR REMOVAL POWDER :

Organoleptic Tests	Result
Colour	Yellowish Brown
Odour	Characteristic
Texture	Fine and Smooth
Appearance	Powder
Washability	Easily Washable

Efficacy Tests	Result
Hair Removal Efficiency Test	The Efficiency rate is found 6 on scale and the efficiency is found 60%
Time Required Test	Time required is found to be 15 min.
Hair Regrowth Test	The hair regrowth is found after 1-2 week & the regrown hairs are thinner than removed hair.

Safety and Skin Sensitivity Tests	Result
Patch Test	No redness, itching or allergic reactions found.
Dermatological Testing	No Adverse reaction is found on different skin types.
pH Balance Test	The pH was 6.5 which is safe and suitable for skin application.

User Experience Evaluation	Result
Ease of Application Test	The application of formulation is easy and the convenience rate is 9 on scale.
Odour and Residue Test	No smell or odour as it doesn't contain any chemical.
Comfort Level Test	No irritation or burn to user

Comparison with Other Hair Removal Methods	Result
Comparison with Razors	Smoothness is obtained more than in use of Razors & duration of hair growth is delayed than Razors. Regrowth of hair after razors application= 4-5 days Regrowth of hair after using Herbal Hair Removal Powder = 10-12 days.
Comparison with Waxing	Hair removal powder used offer less pain than waxing.

Comparison with Hair Removal Creams	Result
	The Herbal hair removal powder offers best user experience as it is safe, effective and easy to use.

Result of Evaluation of Herbal Hair Removal Powder ensures that hair removal powders are tested for safety, effectiveness & user satisfaction.

SUMMARY

Herbal Hair Removal Powder is natural and skin friendly Hair removal formulation. The Natural ingredients are widely accepted because they are safer and have less side effects. The evaluation tests are performed to obtain consistent results and safety for all skin types. The hair removal powder aims to provide safe and effective alternative to chemical depilators. The Herbal Hair Removal formulation involves brightening properties and prevent skin irritation as they included plant based or natural ingredients.

CONCLUSION

Hair Removal Powders offers a quick, cost effective & pain free solution for removal of unwanted hair. As research continues future formulations may focus on using skin friendly ingredients that helps in reducing skin irritation & improving long lasting effects.

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