

# Natural Peel-Off Mask Formulation and Evaluation

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**Abstract:** Peel-off masks are used to treat problems like dead skin, and acne which involves whiteheads, and blackheads while providing nourishment to the skin. This article contains how rice granules, dried banana peel powder, cucumber extract, tragacanth gum, charcoal, gelatin, and neem bark can be used in peel-off masks. The properties of natural ingredients play an important role in removing impurities from the face and how they nourish, hydrate, and glow skin. From all the tests performed it was concluded that the 9<sup>th</sup> formulation gave the desired outcomes while others had some issues with the product.

**Keywords:-** Peel-Off Mask, Removal Of Impurities From The Skin, Usage Of Waste Product, Nourishing The Skin.

## I. INTRODUCTION

### A. Peel-Off Masks

Nowadays Peel-off masks have come to the market for the treatment of skin-related problems like blackheads, dead skin, whiteheads, and acne. This peel-off mask removes debris as well as provides nourishment to the face. There are various chemicals used in marketed available products while underestimating the worth of natural ingredients because natural ingredients have very few chances of adverse side effects. Many natural ingredients can be used for peeloff masks including their waste. These waste ingredients can be very useful in cosmetic products. This herbal formulation contains various powders of natural ingredients which is useful in nourishing skin and giving a glowing effect while giving a soothing effect and removing impurities.

### B. Skin

- The whole skin is considered one single organ and is said to be heaviest.
- Skin has several roles in human body such as contentment of bodily fluids as well as tissues and providing protection from external factors like heat, cold, etc.
- Skin senses the external stimuli like heat when touched to hot surface and sends signal to brain and brains signals back to immediate backing of hand to protect from further damage.
- Skin consists of three layers which are epidermis the outermost layer, dermis comes between epidermis and the inner most layer hypodermis.
- Epidermis have sweat pore and hair shaft, it is further subdivided into stratum corneum,
- S. granulosum, S. spinosum.

- Dermis lies between epidermis and endodermis; it contains sebaceous gland which secretes sebum, hair follicles, nerve endings, artery, vein, sensory receptors, and it mainly regulates body temperature and provide nutrient saturated blood to epidermis.
- Hypodermis is the innermost layer of skin and it holds fat tubule, adipose tissue.

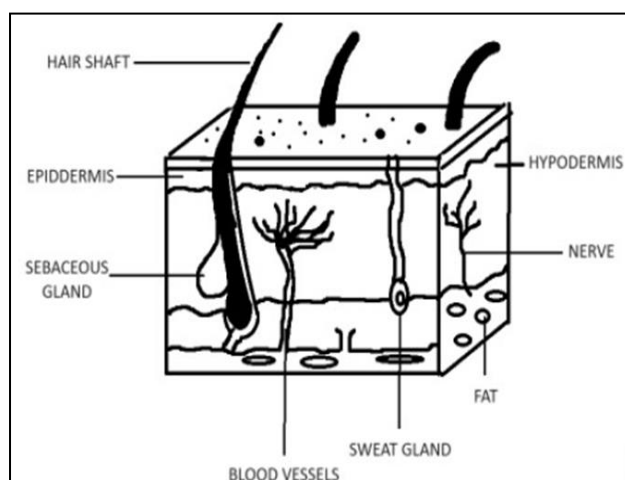


Fig 1: Anatomy of Skin

### C. Types of Skin

- As skin protect internal body, it also needs protection from external factors like air pollution, UV radiation, etc. If the skin barrier which protects skin from external factors is weak then the skin is more sensitive and these factors affects skin.
- When the skin barrier does not work properly it means that there is not enough production of lipids or there is not much retention of water for keeping skin soft and firm causing dry skin while when too much production of lipids or natural oils like sebum can lead to oily skin.
- Skin type usually depends on how the natural skin barrier functions especially in case of moisture content and water content.

➤ The Basic Fiver Types of Skin are as Follows:

- Normal
- Sensitive
- Dry
- Oily
- Combination

• Normal

A skin which is well balanced is considered as normal skin. It should neither be too dry nor be too oily and should not be too sensitive. It should have even skin tone and also a soft texture. Such type of skin can be considered as an ideal skin type.

• Dry

Dry skin is usually caused due to problem with the moisture barrier of the natural skin. External factors like cold weather and by excessive washing causes dryness in skin. It can be characterized when the skin becomes flaky or peels or crack and having rough texture.

• Oily

It usually occurs due to excessive secretion of sebum by sebaceous gland. There are more chances for having oily skin caused by internal factors rather than external. It can also be a genetic for more secretion of sebum, other reason for increased sebum production is hormonal changes which is more common in adolescence condition.

• Combination

A skin that has both oily and normal or dry skin at the same time is said to be combination skin. The oily areas are usually the forehead, nose, and chin while dry skin is elsewhere on the face. The oily area feels greasy and shiny and elsewhere will appear dull and feels rough.

• Sensitive

It can be caused due to genetic predisposition, and certain allergies like animal dander, pollen, and makeup. People with dry skin have increased sensitivity because dryness causes harm to the skin's protective barrier. Skin could have minor as well as severe sensitivity, identified with redness, itching, or burning.

D. Skin-Related Problems

➤ Dead Skin

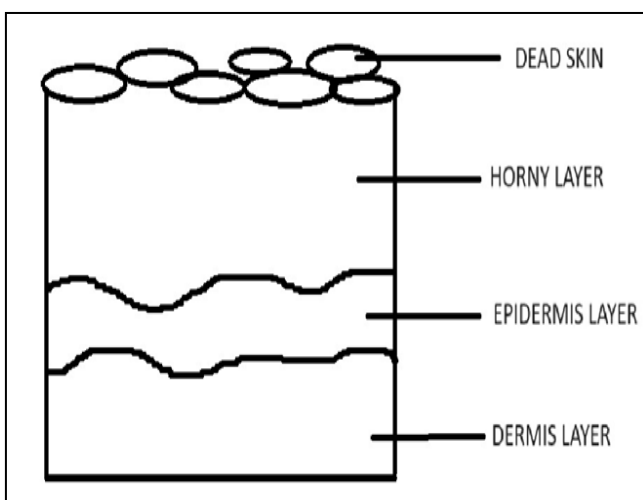


Fig 2: Dead Skin

- Approx around 30 days the skin renews on its own. When the outer layer epidermis sheds dead cells and is replaced with new ones.
- When this dead skin layer accumulates on top, if not exfoliated, can form a dull, dusky, and dry appearance on the skin.
- Dying of skin cells and the formation of new skin cells is a natural process.
- New, more radiant-looking skin is revealed as the old and dead skin cells shed.
- Dead skin cells are generally shed regularly.
- A person can remove dead skin from their face more quickly using exfoliation.
- Factors that cause dead skin cells are:
  - ✓ Age
  - ✓ Lack of proper cleansing
  - ✓ Not exfoliating
  - ✓ Using the wrong moisturizer
  - ✓ Environmental changes
  - ✓ Skin condition

➤ Whiteheads

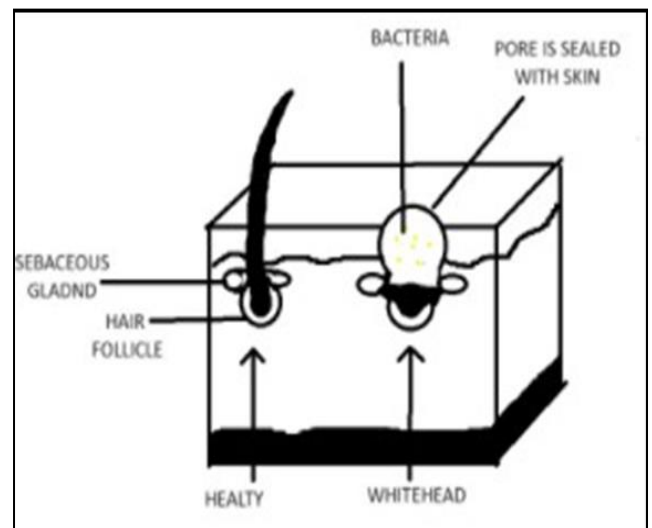


Fig 3: Whiteheads

- The pore opening is small which prevents air from oxidizing the trapped material.
- It is neither inflamed nor infected.
- These are common skin issues and the face, neck, back, and chest are mostly affected.
- They usually are firm, small, white, and yellowish. A squeezer can't extract them.
- Whiteheads are caused due to:
  - ✓ Increased sebum.
  - ✓ Issue in the formation of keratin, a protein that helps in the growth of hair, skin, and nails.
  - ✓ Not washing face regularly.

➤ *Blackheads*

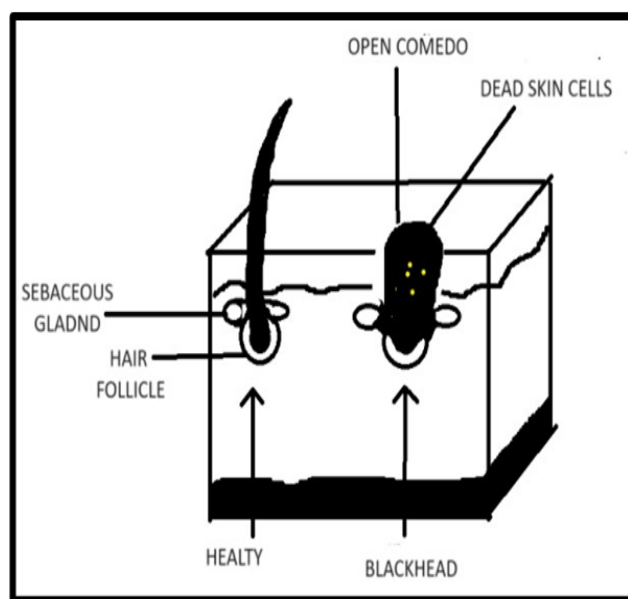


Fig 4: Blackheads

- Usually, blackheads are formed on the face but they can also be seen on other parts of the body like the back, chest, neck, arms, and shoulder.
- Blackheads are a type of acne.
- When hair follicles are clogged then small bumps appear on the skin which are known as blackheads because the surface looks black and dark.
- The hair follicles contain sebaceous glands which release sebum useful in keeping skin soft.
- A comedo is said to be a bump in which dead skin cells and oils get collected in the opening of the skin follicle and when this skin opens on exposure to air, it looks black and a blackhead is formed.
- Factors that increase the chances of having blackheads and acne are:
  - ✓ Too much production of body oil
  - ✓ Hormonal changes during teen years, menstruation, or taking birth control pills causing increment in production of oil.
  - ✓ Taking certain drugs like androgens, corticosteroids, or lithium.
  - ✓ Irritancy in hair follicles when the dead skin does not shed regularly.
  - ✓ Buildup of *Propionibacterium acnes* on skin.

## II. INGREDIENTS

### A. Ingredients Used along with its Properties

Table 1: Material used in Formulation and its Properties

Sr no	Material	Properties
1.	Rice granules	Exfoliation
		Smoothing
		Hydration
		Brightening
		Anti-inflammatory
2.	Dried banana peels	Minimizing pores
		Collagen boost
		Antioxidant
		Acne reduction
		Sun protection
3.	Cucumber extracts	Dried skin relief
		Reduce puffiness and swelling
		Aids acne-prone skin
		Soothes irritation
4.	Tragacanth gum	Provides a base for hydration
		Gelling agent
		Stabilizer
5.	Charcoal	Preservative Absorbent
		Absorbent
6.	Gelatin	Gelling agent
7.	Neem bark	Antimicrobial agent
8.	Peppermint oil	Aromaticity

### B. Tests Performed

Table 2: Different Tests Performed During Formulation

Materials used	P1	P2	P3	P4	P5	P6	P7	P8	P9
Rice	1g	1g	0.5g	0.5g	1g	0.5g	1g	0.5g	0.5g
Dried banana peels	1g	1g	0.5g	0.5g	0.5g	0.5g	1g	0.5g	0.5g
Cucumber extract	20ml	10ml	20ml	10ml	15ml	10ml	20ml	20ml	23ml
Tragacanth powder	2g	1g	2g	1g	0.5g	1g	0.5g	1g	1g
Charcoal powder	2g	1g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g	0.5g
Gelatin	-	-	-	1g	1g	1g	0.5g	1g	1g
Turmeric powder	-	-	-	-	-	-	0.5g	1g	-
Peppermint Oil	-	-	-	-	-	-	1.5ml	2ml	2.5ml
Neem bark powder	-	-	-	-	-	-	-	-	1g

### III. METHODS USED IN FORMULATION

#### A. Formula 1: (Test 1,2,3)

Bananas were purchased from the market and the banana skin was separated. The separated banana skin was kept in the sun for 2-3 days. When the peels were dried enough, they were then ground into powder form and then sieved for fine particles, after that rice was taken and ground into a mixer, and then the rice granules were sieved for the desired size of the granules. Now, the cucumber was squeezed to obtain its extract. The tragacanth gum powder, charcoal powder, dried banana skin powder, rice granules, and lime extract were added and stirred properly.

#### B. Formula 2: (Test 4)

It was observed that the above **Formula 1** didn't work so gelatin crystals were added.

#### C. Formula 3: (Test 5)

When gelatin crystals were added it formed a coarse particle paste and it wasn't sticky so a few drops of cucumber extract were added to the gelatin crystal and heated to melt and then added to **Formula 1**.

#### D. Formula 4: (Test 6)

The **Formula 3** also didn't work so again all the powders, cucumber extract, and lime extract were mixed and stirred well, gelatin crystal was then added and heated in the water bath for 23 minutes but it was observed that the solution didn't mix well.

#### E. Formula 5: (Test 7)

The cucumber extract was added to the mixture of powders (rice granules, dried banana peels powder, tragacanth gum powder, charcoal, and turmeric) with continuous stirring and was heated in the water bath for 2-3 minutes while adding peppermint oil continuously at regular time intervals. The mixture was removed from the water bath and gelatin was added and again kept in the water bath for 2-3 minutes until it became thick. It was then allowed to cool.

#### F. Formula 6: (Test 8)

The peppermint oil was added drop by drop with continuous stirring in the cucumber extract and after all the powders were added slowly with continuous stirring and

heated for 1-2 minutes in a water bath and then gelatin was added till the mixture became a little thick. It was then removed from the water bath and allowed to cool.

#### G. Formula 7: (Test 9)

The neem bark was extracted and the desired red part was ground. Then peppermint oil was added drop by drop with continuous stirring in the cucumber extract and after all the powders were added slowly with continuous stirring and heated for 1-2 minutes in a water bath and then gelatin was added till the mixture became a little thick. It was then removed from the water bath and allowed to cool.

### IV. EVALUATION PARAMETERS

#### A. Organoleptic Properties

- Colour - Black
- Odour - Aromatic
- Consistency - Paste like

#### B. pH test

- The pH test was performed using a pH meter and it was found to be **6.03**.

#### C. Spreadability Test

- A petri dish was taken and 2 gm of sample was applied, a watch glass was placed on it and 10 gm of weight was placed and after 5 minutes the diameter was observed and found to be **7.4cm**.

$$S = m \times l / t$$

Here,

“S” is Spreadability

“m” is the weight kept on the watch glass

“l” is the length of budge on a petri dish

“t” is time

$$S = 10 * 3.7 / 5$$

$$S = 10 * 0.74$$

$$S = 7.4 \text{ cm}$$

*D. Peel-off Test*

- When the sample was applied on the skin after it was dried and peeled it was **easily peeled off**.

*E. Irritancy Test*

- After applying the sample, it was left for 30 minutes and when peeled, irritancy was **not experienced**.

**V. RESULTS AND DISCUSSION**

Table 3: Results Obtained from Each Test

Tests	Color	Odor	Consistency	Irritancy Test	Spreadability Test	Peel-Off Test	Drying Test	Ph
1	Black	Neutral	Paste like	Non-irritant	Easily spreadable	Fails	15 min	-
2	Black	Astringent	Coarse texture	Non-irritant	Not easily spreadable	Fails	20 min	-
3	Black	Neutral	Smooth texture	Non-irritant	Easily spreadable	Fails	20 min	-
4	Black	Unpleasant	Coarse texture	Non-irritant	Easily spreadable	Fails	20 min	-
5	Black	Unpleasant	Paste like	Non-irritant	Easily spreadable	Fails	25 min	-
6	Black	Unpleasant	Smooth texture	Non-irritant	Easily spreadable	Difficulty in peeling	25 min	-
7	Black	Mild aromatic	Paste like	Non-irritant	7.2cm	Easily peels-off	35 min	6.08
8	Black	Aromatic	Paste like	Non-irritant	6.7cm	Easily peels-off	30 min	6.02
9	Black	Aromatic	Paste like	Non-irritant	7.4cm	Easily peels-off	30min	6.03

**VI. CONCLUSION**

On observation from all the tests performed it was concluded that gelatin plays an important role in peel-off masks as it has a sticky nature. The tests which were performed without gelatin, behaved as a scrub. When the product is applied to the skin it takes 20 to 30 minutes to dry and also irritancy was not experienced. As the role of a peel-off mask is to remove impurities the formulated peel-off mask worked in removing blackheads, whiteheads, dirt, and dead skin cells when peeled. It also provides hydration, nourishment, and glowing effect on skin. The ingredients used prove its effect of soothing, nourishing, hydrating and removing impurities.

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