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Research Article

Formulation and Evaluation of Herbal Face Pack

Kiran P. Bhosale ^{1*}, Pranjali D. Ugale ², Priya S. Daingade ²

¹ Assistant Professor, Department of Pharmaceutical Technology, Genba Sopanrao Moze College of Pharmacy, Wagholi, Pune, Maharashtra, India.

² Assistant Professor, Department of Pharmaceutics, Genba Sopanrao Moze College of Pharmacy, Wagholi, Pune, Maharashtra, India.

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*Address for Correspondence:

Kiran P. Bhosale, Assistant Professor, Department of Pharmaceutical Technology, Genba Sopanrao Moze College of Pharmacy, Wagholi, Pune, Maharashtra, India.

Abstract

Objective: The objective of this work is to formulate an herbal face pack for glowing skin. The primary goal of a herbal face pack is to harness the inherent benefits of herbs and plant-based ingredients to improve the overall health and appearance of the skin.

Methods: Natural herbal ingredients were used such as rose petal powder, Multani mitti, dried orange peel powder, turmeric, nutmeg powder, neem powder, sandal wood powder etc. All ingredients were sieved by using #44 mesh. Weighed accurately and mixed geometrically for uniform mixture. Prepared formulation was evaluated by different parameters like organoleptic, physiochemical, physical, irritancy test along with stability examination.

Result: The formulation of combined form had passable flow property which is suitable for face pack. Herbal face pack is used to stimulate blood circulation, rejuvenates the muscle and help to maintain the elasticity of the skin and remove dirt from skin pores.

Conclusion: In this study it is concluded that formulation of face pack found to be good in physical parameter, free from skin irritation. The benefit of herbal cosmetics is their nontoxic nature, reduce the allergic reaction. Thus, in this work, we found good properties for face pack and further optimization study is required on this study to find out the useful benefits of face pack on human use as a cosmetic product.

Keywords: Face pack, Herbal, Cosmetic, Formulation, Evaluation, Appearance.

1. INTRODUCTION

From the ancient period of time, people are of the use of plants for healthy, glowing and beautiful skin. Cosmetic are used to clean, beautify and promote attractive appearance of the skin, hair, lips. Cosmetics are commercially available products that are used to improve the appearance of the skin by action of cleansing, beautifying, promoting attractiveness. Face skin is the major part of the body, which indicates the health of an individual. ¹ A balanced nutrition containing amino acids, carbohydrates and lipids are required for the skin it clear, glossy, and healthy. Women are very conscious about their beauty and took special care of their specific skin type.²

Everyone wants to get fair and charming skin. Now a day, acne, black heads, pimples, dark circles are common. Skin problem is due to impurities in blood, accumulation of toxins in blood during improper food and lifestyles. The herbal paste applied on the skin to treat acne, pimples, scars, pigmentation of skin which is known as 'mukha lepa' in ayurveda. This beauty therapy was popular as facial.³

Face packs are available in various forms. They are broadly classified as following⁵

1. Plastic masks – Wax based, latex based, vinyl based.
2. Hydrocolloid masks – Gel masks (ready to use).
3. Argillaceous masks – Clay based or earth based (ready to use or dry powder).

Benefits of face pack for skin

- i. It nourishes the skin. Fruit face packs supply essential nutrients to skin.
- ii. It helps to reduce, acne, pimple, scars and marks depending on its herbal ingredients.
- iii. It removes dead cells of skin.
- iv. It provides a soothing and relaxing effect on skin.
- v. It helps to restore the lost shine and glow of skin in short span of time.
- vi. Regular use of natural face masks bring glow to skin, improve skin texture and complexion.
- vii. The harmful effects of pollution and harsh climates can be effectively combated with judicious use of face packs.
- viii. It helps to prevent premature aging of skin.

- ix. Formation of wrinkles, fine lines and sagging of skin can be effectively controlled by using natural face packs.
- x. Natural face packs make the skin look young and healthy.

Face packs which are advice for acne, pimple, black heads usually control the over discharge of sebum from sebaceous glands and remove the harmful bacteria inside acne lesion. The scars and marks of skin can be reduced by adding fine powder of sandal, neem, rose petals and orange lentils with acne face pack.

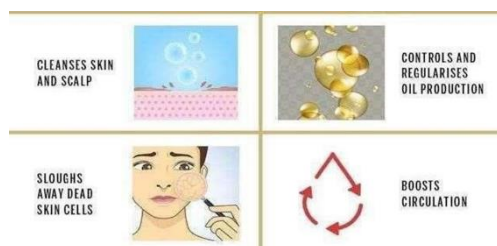


Figure 1: Benefits of Face Pack

2. MATERIALS AND METHOD

All the herbal ingredients used in the present work i.e., rose petal, Multani mitti, orange peel, neem, sandalwood, turmeric, nutmeg was purchased from local market (Shree Arogya Aushadhalaya, Wagholi) in the form of dried powder and were authenticated at G. S. Moze College of Pharmacy, Wagholi, Pune.

The details of the natural ingredients used for formulation of face pack are mentioned below:

Rose petals (*Rosa centifolia*)

Synonym- Cabbage rose Family – Rosaceae

Biological source – Dried rose petals

Chemical constituents - It has high quality of phytochemicals like vitamin C, calcium, crude fibers, iron, protein content, phenyl ethanol, geranyl acetate, geraniol, linalool, benzyl alcohol, benzaldehyde.

Uses- Antioxidant, Natural coolant, Skin toner, Anti-inflammatory.

Rose petals are the loose petals of the fragrant flower rose which are enriched with a lot of Vitamins. Dried rose petals are crushed to make natural rose petal powder. Rose oil and rose water have been used by women across the world to nourish their hair and skin. Rose petal powder is extremely beneficial for hair and skin. Various pastes can be made with rose petal powder by mixing it.

Women have been using rose petals and rose water for ages as a part of skincare. Rose petal powder is yet another resource that you can add to your daily skincare routine. Roses are enriched with vitamins C, B, and K and thus gives skin an amazing glow and makes the skin look flawless. Rose petal powder is 100% natural and it acts as a smooth exfoliator. Although, usually exfoliators have a coarse texture, with the help of rose petal powder a smooth paste can be created to get rid of dead skin cells and dirt and cleans your pores. Rose petal powder also

has anti-bacterial property which helps you to get rid of the bacteria and removes dirt and excess oil from the pores.

The rose petal powder has anti-inflammatory and cooling properties which help to treat burns and acts as a natural coolant for your skin. A lot of people use rose water as a natural toner. Rose petal powder can be applied to get rid of pigmentation and even skin tone. Rose petal powder has anti-aging property and prevents your skin from getting wrinkles by tightening the skin. By using rose petal powder, you can have younger-looking skin. Dark circles are a major issue especially these days when life is full of stress. Rose petal powder helps to remove and reduce dark circles by using it regularly. Rose petal powder is best for oily skin type because it helps in controlling excess oil but also doesn't make the skin too dry. Rose petals are rich in Vitamin C and stimulate collagen production which helps in lightening blemishes and making skin cells stronger. Women from all over the world have been buying organic rose powder in bulk to add rose petal powder to their skincare routine.¹² To get rid of swollen and itchy acne, use rose petal powder with other natural ingredients and make an anti-acne rose petal powder paste. Rose petal powder can be used for soothing sunburnt skin. Vitamin C protects your skin from UV rays and prevents damage to the skin cells. Rose petal powder has antioxidant properties which help in soothing skin irritation.

Benefits of rose petals for skin-¹²

1. Natural exfoliator and cleanser.
2. Anti-inflammatory natural coolant
3. Evens the skin tone.
4. Prevents aging and wrinkles.
5. Lightens the skin blemishes.
6. Remove or reduce dark circles.
7. Control excess oil.
8. Prevents acne.
9. Relieves sunburnt skin.
10. Has antioxidant properties.

Multani mitti (*Calcium bentonite*)

Synonym- Fuller's earth, Bleaching clay

Chemical formula – $[(MgAl)5Si_8O_{22}(OH)_4 \cdot 4H_2O]$.

Chemical constituents – Hydrated aluminium silicates, magnesium chloride, and calcium bentonite and has a composition similar to bentonite clay.⁸ Uses- Antiseptic, Skin tightening, Moisturising, Cleanser.

Multani mitti is a popular natural skincare product likely to be seen in almost every Indian home. The place of origin of Multani mitti is Multan in Pakistan; it is called as multani mitti and has been imported to India for many years. It resembles clay in appearance but is much more skin-friendly. It's high in minerals and water, and it comes in various colours, including brown and green. It

has no odour or flavour. "Fuller's Earth" is the English name for this clay.

⁷Multani mitti can be used to treat several skin and hair conditions without any side effects, and people have long believed in its natural characteristics.⁹

Medicinal properties of multani mitti. These include-

- Anti-acne property
- Anti-inflammatory property
- Astringent property
- Absorbent property
- Antimicrobial property
- Skin brightening property

Benefits of Multani mitti -

- Multani mitti can help tone the skin. As a result, wrinkles, loose skin, and other signs of ageing can be slowed down, if not reversed.
- Multani mitti achieves this by increasing skin elasticity and making it more robust.
- It is a cooling herb with a skin-soothing effect.
- Multani mitti is an excellent remedy for skin bothered by hot temperatures and sunburns. This cooling effect occurs quickly and lasts for a long time.
- Multani mitti is often used to improve the complexion.
- It is useful to erase scars.
- It also helps to prevent suntan and pigmentation.^{8,10}
- Multani mitti is an effective home remedy for pimples or acne, as well as marks left by healed acne.
- Multani mitti's absorbent properties aid to eliminate excess oil from the skin and prevent pimples.
- This also has a cleansing effect and helps to remove debris and pollution particles from the skin.
- Due to its astringent and antibacterial properties, multani mitti can be applied to the skin and blended with rose water to help treat acne.^{8,9,10}

Sandal wood (*Santalum album*)

Synonym-Yellow sandalwood, Lignum Santali. Family – Santalaceae

Biological source – Heartwood of the stem and roots of *Santalum album*.

Chemical constituents – Sandalwood contains about 2-5 % of volatile oil. The oils contain about 90-97% sesquiterpene alcohol, santalol. Santalol is found in the form of isomers alpha santalol and beta santalol. Alpha and beta santalene.¹³

Use- Sedative, Anti-ageing, Improve digestion,

Alpha- santalol

Beta- santalol

In antioxidants that prevent skin sagging and the consequent formation of wrinkles. It is also capable of fighting the damage caused by the presence of free radicals in the skin. Ayurveda reveres it for its anti-ageing properties that can make skin firmer, while also reversing sun damage. Isn't that amazing. The antiseptic properties of sandalwood reduce bacterial growth on the skin, which makes it very effective in treating acne, boils, and sores and preventing them from worsening. Sandalwood is known to heal your skin tissues. This healing property helps in getting rid of scars from wounds, blemishes, dark spots and eczema. You can also use sandalwood powder for skin whitening as it removes skin impurities to give you an even tone. This is why brides-to-be are advised to apply sandalwood on face to look flawless on their wedding day. Sandalwood is rife with anti-inflammatory properties, which makes it an ideal remedy for sunburns and skin rashes. It heals skin irritation and itchiness caused by infections, insect bites, or product reactions and also prevents eruptions and acne. The effects of a suntan can last for long if not treated quickly. Rubbing sandalwood oil or applying its paste on the affected parts can remove suntan gradually as well as reduce the redness and burning caused by overexposure to the sun's rays.

1. Benefits of sandalwood for skin

2. Antiageing

3. Fights acne

4. Removes scarring

5. Soothes the skin

6. Anti tanning

Orange peel (*Citrus reticulata*)

Synonym- Orange cortex, Seville orange

Family- Rutaceae

Biological source- Fresh and dried outer part of the pericarp of citrus reticulata.

Chemical constituents- It contains isomer of hesperidin, neohesperidin and another flavanone glycoside naringin.¹⁶

Uses- Carminative, Stimulant, Flavouring agent.

Orange peel powder is rich in vitamin C, calcium and citric acid, all of which have quite impressive results when it comes to making your skin and hair healthy. One of the best orange peel powder benefits is the fact that it is rich in vitamin C. This not only helps in making the skin brighter, but also renders a youthful glow to it. Orange peel powder is an effective exfoliating agent that helps in removing blackheads and unclogging your pores. Lightens dark spots if you are suffering from acne scars, dark spots or even pigmentation, orange peel powder's rich content of citric acid takes care of the issue.

Orange peel powder contains enough calcium that renews and regenerates the skin. Orange peel powder is known to regulate sebum production, thus getting rid of the skin's excess oil. Another one of the many orange peel powder benefits is the fact that it protects you from

sun damage with its anti-inflammatory properties. Orange peel powder works towards making the skin more firm and elastic. It also improves collagen production, thus reversing the effects of ageing.¹⁷

Benefits of orange peel powder for skin-

1. Brightens the skin.
2. Removes blackheads.
3. Regenerates the skin
4. Reverses ageing
5. Reverses sun damage.

Neem (*Azadirachta indica*)

Synonym- Melia Azadirachta

Family- Meliaceae

Biological source- Fresh or dried leaves.

Chemical constituents-leaves contain ingredients such as nimbin, nimbanene, 6-desacetylnimbinene, nimbandiol, nimbolide, ascorbic acid, n-hexacosanol and amino acids, 7-desacetyl-7-benzoylazadiradione, 7-desacetyl-7-benzoylgedunin, 17-hydroxyazadiradione and nimbiol.^{18,19,20}

Uses- Anti-fungal, Sedative, Contraceptive, Antibacterial, Antiviral.

Their antiseptic, anti-inflammatory, antioxidant, and healing properties. This excellent herb is a great source of fatty acids, vitamins and minerals that are needed for healthy skin and hair. It contains active constituents like nimbidin, nimbolide and azadirachtin that have some amazing medicinal properties that can help you get rid of every skin and hair problems. The antibacterial properties of neem fight acne. Neem is very popular as a medicinal plant. Neem leaves and its extracts are commonly used for e-causing bacteria, which helps in the treatment and prevention of acne. Also, it's extremely useful in controlling oil production in the skin.²²⁻²⁵

Neem has antibacterial and anti-inflammatory properties that may soothe irritated skin. With the advantage of getting a cooling effect on the skin, neem is beneficial for treating skin sensitivity. Additionally, neem features a soothing effect on dehydrated or dry skin. Neem leaves are stuffed with antioxidants, moisturizing triglycerides and vitamin E, which makes it an ideal anti-ageing treatment. They lower wrinkles, fine lines and dark spots and make your skin look firm and toned. Neem on skin, particularly on face is helpful to say goodbye to whiteheads and blackheads when used regularly. It pulls back large pores and works as an exfoliating agent to pull out impurities and tighten pores.²¹

Benefits of neem for skin-²¹

1. Treats acne
2. Pacify irritated skin.
3. Fight signs of ageing
4. Tackles blackheads and whiteheads.

Turmeric (*Curcuma longa*)

Synonym-Indian saffron, Haldi

Family- Zingiberaceae

Biological source- Dried rhizomes

Chemical constituents- Turmeric contains about 5% curcumanoids. Curcumanoid contains curcumin-I, curcumin-II, curcumin-III. Turmeric contains about 5% volatile oil. Their volatile oil contains sesquiterpenes, alcohol and ketone and monoterpene.

Uses- Anti-inflammatory, Heal wounds, Anti-microbial agent, Strong anti-oxidant, Natural painkiller

For hundreds of years, people around the world have linked turmeric to healing properties and cosmetic benefits. The bright, yellow-orange spice is related to ginger. It's available as a ground spice or in supplements and other beauty and dermatology products. Turmeric gets its health benefits primarily because of curcumin, a bioactive component. Curcumin has anti-inflammatory and antioxidant properties. Turmeric contains antioxidants and anti-inflammatory components. These characteristics may provide glow and luster to the skin. Turmeric may also revive your skin by bringing out its natural glow. The curcumin found in turmeric can help wounds heal by decreasing inflammation and oxidation. It also lowers the response of your body to cutaneous wounds. This results in your wounds healing more quickly. It cures the skin diseases occurring due to blood impurities.³³ Turmeric boost collagen production and speed up the body's ability to form new, healthy tissue. It also blocks elastase, an enzyme that attacks your skin's ability to produce elastin. If elastin production slows down, fine lines, wrinkles and sagging are more likely to appear.³⁵

Benefits of turmeric for skin²⁶⁻

1. Could help heal acne.
2. Lightens hyperpigmentation
3. Deal with dull skin
4. Reduces dark circles
5. Protects against environmental damage
6. Prevents premature ageing
7. Could help psoriasis and eczema.

Nutmeg (*Myristica fragrans*)

Synonym- Myristica, Nux Moschata Family- Myristicaceae

Biological source- Dried kernels of the seeds of myristica fragrans.

Chemical constituents- Borneol, Clemicine, Myristicin, Geraniol, Camphene & Dipentene. Uses- Carminative, Stimulant, Aromatic, Stomachic, Induce abortion & Narcotic action.

Nutmeg, or jaiphal, is an exotic spice that is known for its sweet aroma and is used for the preparation of various dishes. Originally from Indonesia, it is the seed of an

evergreen tree called *Myristica fragrans*. One of the most amazing benefits of nutmeg is that it has the ability to even out discolorations and pigmentation on your face. Dark spots, pigmentation and freckles appear due to excessive exposure to the ultra-violet rays of the sun, hormonal changes, progressing age, side-effect of medications or a certain skin condition. Its mildly abrasive nature makes it a great exfoliator for your skin and further makes it gentle and smooth. Mix it with other essential kitchen ingredients and give your skin a natural glow. It helps shrink your pores and ensures a normal and healthy skin. Moreover, it has anti-inflammatory and antibacterial properties that help prevent acne. Nutmeg comes packed with antioxidants and antiageing properties that fight off the cell-damaging free radicals causing oxidative stress, making you look older than your








age. The oxidative stress may leave you with fine-lines and wrinkles in order to avoid the same, ensure adding nutmeg to your beauty regime.³⁴ Nutmeg tends to restore moisture while stimulating dull skin, further reduces signs of ageing. It's always good to use this natural ingredient than opting for a store-bought beauty product to treat your skin effectively.²⁷

Benefits of nutmeg for skin²⁷-

1. Reduces pigmentation
2. Gently exfoliates your skin
3. Treats oily skin

Promotes youthful skin Acts as a natural toning cleans.

Table 1: List of Ingredients

Sr.No.	Plan name	Medicinal use	Figure
1.	Rose petal (<i>Rosa centifolia</i>)	Used in cleansing, astringent, antibacterial and antiseptic.	
2.	Multani mitti (<i>Calcium bentonite</i>)	Fight acne and pimples. Remove excess sebum and oil. Treats tanning and pigmentation. Exfoliates and cleanses.	
3.	Sandal wood (<i>Santalum album</i>)	Prevent wrinkles, reduce acne, dark spot and heal wounds. Helps nourish the skin, improve the elasticity, even out skin tone.	
4.	Orange peel (<i>Citrus reticulata</i>)	Rich in vitamin C. Antibacterial. Fight acne and give flawless skin. Natural glowing agent. Reduces mucus secretion from the nose.	
5.	Neem (<i>Azadirachta indica</i>)	Eases irritated skin. Decrease blemishes. Treat acne. Antibacterial, antiaging property.	
6.	Turmeric (<i>Curcuma longa</i>)	Heal wounds. Lighten skin. Antibacterial, antiaging. Cure acne. Heal cracked heels.	
7.	Nutmeg (<i>Myristica fragrans</i>)	Rich in antioxidant. Boost blood circulation. Eliminate dead skin. Reduce pigmentation.	

FORMULATION

Procedure for formulation of face pack

1. The powdered ingredients were sieved using #44 mesh.
2. All ingredients weighed accurately.
3. All weighed ingredients were mixed geometrically for uniform mixing.
4. This was then stored in air tight container for evaluation.

Table 2: Composition of face pack.

Sr. No.	Constituents	Scientific Name	Family Name	Percentage (%)
1.	Rose Petal powder	Rosa centifolia	Rosaceae	15%
2.	Multani mitti	Calcium bentonite	-	30%
3.	Sandal wood powder	Santalum album	Santalaceae	25%
4.	Orange peel powder	Citrus reticulata	Rutaceae	12%
5.	Neem powder	Azadirachta indica	Meliaceae	8%
6.	Turmeric	Curcuma longa	Zingiberaceae	5%
7.	Nutmeg powder	Myristica fragrans	Myristicaceae	5%

**Figure 2: Ingredients Taken for Face Pack****Figure 3: Prepared Face Pack**

Procedure for application of face pack

1. Face pack should be applied on wet face.
2. For oily skin add Potato juice/lemon juice, for dry skin add Row milk/rose water.
3. Form a paste with optimum thickness.
4. It should be applied evenly on the face with the help of a brush.
5. It should be left for 15-20 minutes for complete drying.
6. Then it should be removed with the help of a wet sponge or wash with Lukewarm water.

Precaution to be taken while applying face pack

1. Choose the face pack according to your skin type. Take opinion of natural therapist or concerned skin expert before applying face pack.
2. The face pack should not be left on face more than 20-25 minutes. Keeping for very long time may result in formation of wrinkles, sagging of skin and enlargement of open pores.
3. Apply face pack twice in a week. Don't try to peel or scratch the dried face pack. This may harm underlying skin.
4. Spray water (lukewarm water) on face before removing dried face pack. After removing the mask, roll an ice cube on facial skin. This helps to close open pores and tightens skin. It also tones and soothes the skin.
5. Do not scrub face vigorously. This may result in eruption of pimples and dark spots. Stay away from heat when you have applied face pack.
6. Avoid applying face pack near eye zone. The skin around eye is very sensitive. The process of removing face pack may damage skin around eyes.⁶

EVALUATION OF FACE PACK

Organoleptic evaluation

The evaluation of the herbal face pack by its color, odor, appearance, texture etc. The external characters of the formulation were examined based on the method described by Siddiqui et al.²⁸

Physicochemical evaluation

Physicochemical parameters were determined, including the determination of pH, Ash value, Moisture content.²⁹

Physical evaluation

The Flow property of the dried powder of combined form was evaluated by performing Angle of repose by funnel method, Bulk density and tapped density by Tapping Method.³⁰

Irritancy test

Mark an area on the left-hand dorsal surface. Definite quantities of prepared face pack were applied to the specified area and time was noted. Irritancy, erythematic,

edema was checked if any for regular intervals up to 24 hr. and reported.³¹

Stability studies

Stability testing of prepared formulation was conducted by storing at different temperature condition. The Formulation were stored at different temperature conditions like, room temperature and 40C and were evaluated for physical parameter like color, odor, pH, consistency and feel.³²

3. RESULT AND DISCUSSION

Following evaluation parameter were performed to ensure superiority of prepared herbal face pack.

Organoleptic Evaluation

Herbal face pack was evaluated for organoleptic parameter showed in Table 3. The color of formulation was brownish yellow. The odor of formulation was pleasant. Appearance and texture were acceptable as per requirement of cosmetic formulations.

Table 3: Organoleptic Evaluation

Sr. No.	Parameter	Observation
1.	Color	Brownish yellow
2.	Odor	Pleasant
3.	Appearance	Smooth
4.	Texture	Fine

Physicochemical Evaluation

Herbal face pack was evaluated for physicochemical parameter showed in the Table 4. The pH of formulation was found close to neutral. The ash content and moisture content were within limit.

Table 4: Physicochemical Evaluation

Sr. No.	Parameter	Observation
1.	pH	7.12

Physical Evaluation (powder property)

Herbal face pack was evaluated for physical parameter (powder property) showed in Table 5. Rheological findings justified the flow (powder) properties of the herbal face pack. It was found to be a free-flowing and non-sticky in nature.

Table 5: Evaluation of flow properties

Sr. No.	Parameter	Observation
1.	Tapped density	0.71 gm/ml
2.	Bulk density	0.59 gm/ml
3.	Angle of repose	32
4.	Hausner's ratio	1.2
5.	Carr's index	20.3

Irritancy Test

The result of irritancy test was shown in Table 6. The formulation showed absence of irritation, redness and swelling during irritancy studies. This formulation is safe to use on skin.

Table 6: Irritancy Test.

Sr. No.	Parameter	Observation
1.	Irritation	No
2.	Redness	No
3.	Swelling	No

Stability Studies

The result of stability was shown in Table 7. No change in color, Odor, Texture and smoothness were observed at mentioned conditions of stability except pH. The stability studies showed a slight change in pH of formulation at 40C.

Table 7: Stability Test.

Sr. No.	Parameter	Room temperature	40C
1.	Color	No change	No change
2.	Odor	No change	No change
3.	PH	7.12	7.18
4.	Texture	Fine	Fine
5.	Smoothness	Smooth	Smooth

4. CONCLUSION

Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbal formulations have growing demand in the world market. Herbal face pack or masks are used to stimulate blood circulation rejuvenates the muscles and help to maintain the elasticity of the skin and remove dirt from skin pores. The advantage of herbal cosmetics is their non-toxic nature reduce the allergic reactions. Herbal face packs are considered as sustaining and productive way to advance the appearance of skin. It is a good attempt to formulate the herbal face pack containing natural herbal ingredients such as Rose petal powder, Multani mitti, orange peel powder, Neem powder, Chandan powder, Turmeric and Nutmeg powder. After formulation and evaluation, we found good properties for the face pack, free from skin irritation and maintained consistency after stability storage conditions. This herbal face pack having enough potential to give efficient clear, healthy and glowing effect on skin. The overall study is useful due to its benefits on the human being as a cosmetic product.

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