



RESEARCH ON HERBAL BODY DE-TAN SOAP FORMULATION FROM ORYZA SATIVA AND LENS CULINARIS (MASOOR DAL)

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Abstract:

The skin healing benefits of rice have been known for the centuries. Rice (*oryza sativa*) water is a food processing waste that can potentially be incorporated into cosmetic formulations. However no scientific evidence supports their role in skincare products. The aim of this project is to design and develop an herbal soap formulation containing *oryza sativa* and *lens culinaris* to evaluate its biological properties, namely the anti-ageing and anti-oxidant properties.

Lentil also known as Dal, it's a legume native to India, Canada and turkey. It is one of the most important protein sources for vegetarians in Indian subcontinent. They come in different sizes and shapes, usually grow in pods. They appears in various colours as well such as yellow, orange, black, green and red. It contains variety of phytonutrients like carotenoids, tocopherols, saponins, phytic acid, phenolics and phytosterols. Rice is antioxidant and anti-inflammatory in nature, so any product containing the extract applied on skin or hair it may protect the skin from damaging free radicals and irritants. Since ancient times the powder of lentils is used on the skin for getting clarifying and cleansing benefits.

Keywords: De-tan soap, rice soap, masoor dal soap, herbal soap, skin care, topical application.

Introduction:

The greek term “kosm tikos”, which means to have the ability to organize power or talent in decorating, is where the word ‘cosmetic’ oriented. The story of cosmetics beginnings unfolds like a continuous thread throughout human history. In prehistoric times, 3000 BC man utilized colours as decorations to draw in the animals he wanted to hunt. He also used colors to shield himself from enemy attacks by adorning his body and skin, which made the enemy afraid.

The cosmetics, according to the Drug and Cosmetics Act is defined as articles intended to be rubbed, poured, sprinkled or sprayed on, introduced into or otherwise applied to the human body or any part there of for cleansing, beautifying, promoting attractiveness or altering the appearance.

The cosmetic does not come under the review of drug license. The herbal cosmetics are the compositions made with phytochemicals derived from various plant sources, which impact skin functions and supply essential nutrients for maintaining healthy skin and hair. Herbal cosmetics are natura herbs and their products utilized for their aromatic properties in cosmetic preparation. According to the Drug & Cosmetic Act, plants and essential oils used in the cosmetics cannot claim to have any medicinal properties or to go deeper than the skin's superficial layers.

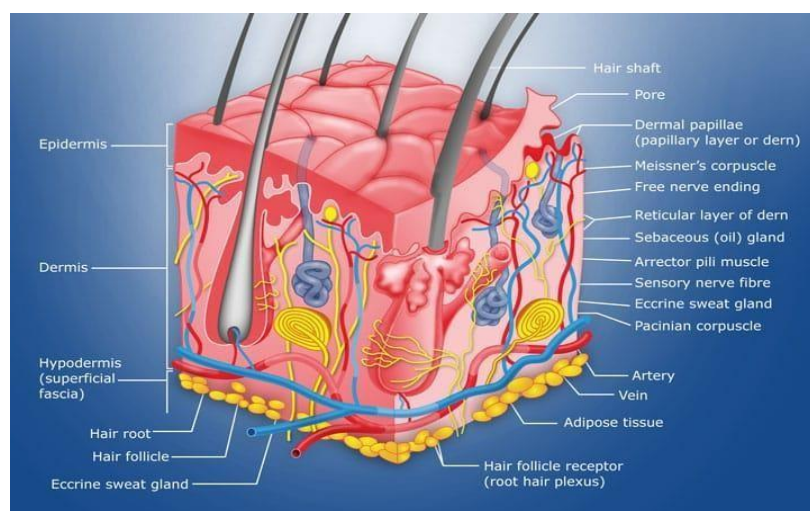
Herbal soap preparation is a medication or therapeutic that primarily uses plant parts, such as leaves, stems, roots and fruits to cure illnesses or injuries and promote overall health. It also contains anti-bacterial and anti-fungal properties. This preparation is applied topically and comes in a variety of forms including creams, lotion, gels, soap, solvent extracts and ointments. It also has anti-bacterial properties. Many skin conditions have been treated with the qualities of creams and soaps. Fungi, specially *Staphylococcus aureus* and *Staphylococcus* species are the primary cause of skin infections. In traditional medicine, plant juice and extract are topically administered as antibacterial and anti-inflammatory drugs to treat skin conditions such as ringworm, eczema, and pruritus. The soft gel form is used to treat psoriasis disease. Simple soapy plant preparations can improve skin penetration, soften the epidermis of the skin, and speed up the healing and resolution of acne. In this review article herbal soap contains masoor dal, rice, vitamin e oil, glycerin and turmeric as natural plant ingredients and this content gives anti- ageing, detaning and anti-oxidant activity. In this soap Lentil is the main compound and shows medicinal properties. Red lentil and its extract exhibit various properties such as it removes tan, removes ache, heals dry skin, removes facial hair, used as exfoliator and also brightens the skin tone and cleanses the skin. Red lentils is the important source of protein for the vegetarian population in developing countries. Red lentils is the vegetable that has the highest level of protein (26%) after soyabeans and hemp. It is rich in macronutrients, micronutrients, and bioactive components. Red lentils contains special compounds called lectins, which may help in infections. It reduces the concentration of lipids in the blood.



Rice has got the greatest medicinal value. Rice is mainly used for the hair and skin problems, it gives nourishment to the hair and makes the hair strong and thick. Rice gives many benefits to the skin as well like it protects the skin barrier, skin whitening, reduce skin aging, sun protection and glowing skin. micronutrients, and bioactive components. Vitamin e oil is a potent lipid-soluble antioxidant that protects cell membranes against oxidative damage and supports the integrity of respiratory epithelial barriers. Vitamin E is a fat – soluble antioxidant that stops the production of ROS formed when fat undergoes oxidation. It relieve various dry skin conditions like psoriasis, eczema and dermatitis. It provides essential nourishment to the skin and makes it soft and smooth. It prevents dryness of the skin.

Introduction to Skin:

The skin is the body's outermost and most superficial layer. It makes up between 15 and 20 percent of the body's overall mass. The skin is an organ that constantly changes and is made up of numerous specialised cells and structures. As we age, changes in the skin's structure have an impact on how it looks. Our skin is a reflection of our ethnicity, way of life, age, and level of health. Skin surface features such as colour, tone, and evenness, as well as pigmentation, are indicators of the health of our skin. In order to maintain our skin's "excellent state," the cosmetic and pharmaceutical industries provide a large arsenal of skin care products and procedures that clean, soothe, repair, reinforce, protect, and treat our skin. Skin care products are widely accessible in daily life and are important in nursing and health care. Skin care products are widely accessible in daily life and are important in nursing and health care.



Skin care product advertising frequently bases its claims on an effect (such as moisturising or antioxidant) that is elicited by an active ingredient (such as urea or tocopherol) that is supplied through a vehicle (such as lotion) that makes use of a particular technology (e.g. nanotechnology). The fastest way to improve the appearance of the skin on your face is to moisturise more. Moisturization improves skin texture and lessens the visibility of fine lines and superficial wrinkles by raising the water content of the epidermis. Hyaluronic acid and other dermal glycosaminoglycans (GAGs) help the skin stay hydrated naturally. All living things contain hyaluronic acid (HA), also referred to as hyaluronan, which is a type of linear carbohydrate polysaccharide. It has a strong hydrophobic property. One-third of the 15 g of HA in the human body is found in the skin. The skin's HA has multiple functions, including controlling epidermal cell connections, modifying cellular immunity, living in extracellular matrix molecules, and absorbing large amounts of water. One gramme of water can absorb six litres of water.⁽¹⁰⁾ Chronologically aged skin exhibits a lack of elasticity and architectural regularity and appears dry, thin, and flattened. The amount of water in the skin is considerable, which is necessary for its optimal operation, but as we age, our skin loses moisture content. Dehydration of the skin can cause wrinkles, superficial lines, scaly, taut skin, and premature ageing.

Classification:

- a. Dermis
- b. Stratum corneum
- c. Stratum Spinosum
- d. Stratum granulosum

The skin's distinctive form reflects the fact that its main purpose is to protect the body from the environment's irritants. The skin is made up of two layers: the inner dermal layer, which assures strength and suppleness and supplies the epidermis with nutrients, and the outer epidermal layer, which is highly cellular and serves as a barrier. Vitamin C is found in high concentrations in normal skin, where it supports a number of wellknown and significant functions, including promoting collagen formation and aiding in antioxidant defence against UV-induced photodamage.

History:**1) Red lentils (*Lens culinaris*):**

Red lentils (*lens culinaris*) also called as masoor dal given by Medikus in the year 1787 is a staple food in every household . It is considered as one of the ancient crops with a history dated back to 7500-6500 BC. There are two varieties of lentils like *macroserma* and *microserma* that are cultivated. It is widely cultivated in warm, tropical and temperate zones for its edible and nutritious seeds. In addition, it is an important source of protein for the vegetarian population in developing countries. Masoor dal is red in colour; it is split masoor and does not have any skin. The whole masoor is brown in colour. Masoor dal is a good source of carbohydrates, proteins, fibres, vitamins and other micronutrients. It has the highest level of protein (26%) after soybeans and hemp. It is rich in macronutrients, micronutrients and bioactive components.

Chemical Constituents:

The composition of lentils is approximate 28% protein, 63% total carbohydrates(47% of which is starch and 12% dietary fiber), and only about 1% fat.

● **Pharmaceutical Activity:**

1. It has anti-oxidant activity.
2. It shows anticancer properties.
3. It reduces the concentration of lipids in the blood.
4. It shows antidiabetic activity.

● **Taxonomy:**

Name	Rice
Kingdom	Plantae
Division	Magnoliophyta
Class	Magnolipsida
Order	Fabales
Family	Faboideae
Tribe	Vicieae
Genus	Lens
Species	L.culinaris

2) **Rice(Oryza sativa):**

Rice (oryza

sativa) is the most important cereal crop in the developing world and is the staple food of over half the world's population. Rice derived ingredients such as phenolic compounds, betaine, squalene, tricin and rice bran are antioxidants, antiaging, anti-inflammatory, whitening, photoprotective and moisturizing by combating free radicals which can damage the skin and lead to premature aging. Rice ingredients have demonstrated benefits for dermatological conditions like atopic dermatitis treatments. The another rice derivative Inositol is that it moisturizes the skin, balances sebum production and maintains skin elasticity by improving the appearance of wrinkles and fine lines.



● **Chemical Constituents:**

The rice grain constitutes 12% water, 75-80% starch(carbohydrates), 7% protein, 3%fat and 3% fibres.

● **Pharmacological Properties:**

1. It has properties like antioxidant, anti-colitis, anticancer, antitumor, anti-mutagenic, antidiabetic, anti-aging and anti-inflammation.
2. Rice water also has vitamin B, C, E and minerals which promotes skin cell growth and stimulates blood flow.

● **Taxonomy:**

Name	Rice
Kingdom	Plantae
Division	Magnoliophyte
Class	Liliopsida
Order	Poales
Family	Gramineae(Poaceae)
Tribe	Oryzeae
Genus	Oryza
Species	Sativa

3) **Glycerine:**

Glycerine is clear, colourless, viscous, sweet-tasting liquid belonging to the alcohol family of organic compound. Chevreul gave glycerine its name, the substance was first isolated in 1783 by German Swedish chemist *Carl Wilhelm Scheele* who described it as the 'sweet principle of fat'. Glycerine soaps that contain glycerol, a component of fat or oil. They are recognizably different from other soaps because they are translucent. The clarity is due to the alignment of the soap molecules, which can be induced through the addition of alcohol and sugar. This is usually done for the homemade glycerine soap that are not remeltable.



● **Chemical Constituent:**

- 1) The molecular formula for glycerine is $\text{HOCH}_2\text{CHOHCH}_2\text{OH}$.
- 2) Glycerine is a polyol compound that contains three hydroxyl groups and three carbon atoms.

● **Pharmacological Properties:**

- 1) Like OTC soaps, pure glycerine soap is all natural. It doesn't contain alcohol, fragrance, or other chemical based ingredients that could irritate the skin.
- 2) Skin's natural oils are often stripped during the bathing process, whether from hot water or harsh products. Glycerin can help lock in your skin's natural moisture and prevent over-drying.
- 3) It can help many drying conditions like- acne, dermatitis(eczema), dry skin, psoriasis and rosacea.

4) **Vitamin E oil:**

Vitamin E was discovered by Evans and Bishop in 1922. Work in the 1930s revealed the chemical structure and the biological function of alpha-tocopherol. Vitamin E is an important fat-soluble antioxidant and has been in use for more than 50 years in dermatology. It is an important ingredient in many cosmetic products. Vitamin E, occurring naturally in food in the form of α -Toc oxidizes slowly when exposed to air. The stability of topical vitamin E may be increased by the use of vitamin E conjugates, which are esters of tocopherol, resistant to oxidation but can still penetrate skin layers.



● **Chemical Composition:**

- 1) Naturally occurring vitamin E exists in eight chemical forms (alpha-, beta-, gamma-, and delta-tocopherol and alpha-, beta-, gamma-, and delta-tocotrienol) that have varying levels of biological activity.
- 2) Chemical formula of vitamin e oil is $C_{29}H_{50}O_2$.
- 3) There are eight types of vitamin E (α -, β -, γ -, and σ -tocopherols and their related corresponding tocotrienols), γ -tocopherol being the most abundant tocopherol in diet, whereas α -tocopherol (α -Toc) is the most abundant vitamin E derivative in human tissues and sera.

● **Pharmacological Properties:**

- 1) Vitamin E is widely known as a potent antioxidant.
- 2) Vitamin E possesses anti-inflammatory properties.
- 3) These crucial properties of vitamin E are beneficial in various aspects of health, especially in neuroprotection and cardiovascular, skin and bone health.
- 4) Vitamin E possesses neuroprotective effects, and this has been proven in clinical trials and models of various neurological disorders, including traumatic brain injury (TBI), Alzheimer's disease (AD), and Parkinson's disease (PD).

5) **Turmeric:**

The use of turmeric dates back nearly 4000 years to the Vedic culture in India, where it was used as a culinary spice and had some religious significance. It probably reached China by 700 ad, East Africa by 800 ad, West Africa by 1200 ad, and Jamaica in the eighteenth century. Turmeric is a product of *Curcuma longa*, a rhizomatous herbaceous perennial plant belonging to the ginger family Zingiberaceae, which is native to tropical South Asia. Turmeric may be the first known cosmetic as it has been traditionally smeared on the skin by women. It is believed to reduce facial hair growth, reduce acne and improve complexion.



● **Chemical Constituents:**

- 1) The pharmacological activity of turmeric has been attributed mainly to curcuminoids consists of curcumin (CUR) and two related compounds demethoxy curcumin (DMC) and bisdemethoxycurcumin (BDMC).
- 2) Curcumin , demethoxycurcumin , and bisdemethoxycurcumin have been used as marker compounds for the quality control of rhizomes, powders, and extract ("curcumin") products

● **Pharmacological Properties:**

- 1) It is a highly pleiotropic molecule that exhibits antibacterial, anti-inflammatory, hypoglycemic, antioxidant, wound-healing, and antimicrobial activities.
- 2) it was traditionally used for disorders of the skin, upper respiratory tract, joints, and digestive system.
- 3) turmeric is promoted as a dietary supplement for a variety of conditions, including arthritis, digestive disorders, respiratory infections, allergies, liver disease, depression, and many others.

● **Formulation:**

INGREDIENTS

<input type="checkbox"/>	Soap base - 100 gm	
<input type="checkbox"/>	Rice powder(Oryza sativa) - 1.5gm	
<input type="checkbox"/>	Masoor dal(Lens culinaris) - 1.5gm	
<input type="checkbox"/>	Vitamin E oil - 2 drops	
<input type="checkbox"/>	Glycerine - 4 drops	
<input type="checkbox"/>	Turmeric powder – for colour	
<input type="checkbox"/>	Sandalwood oil - 2 drops	

● **Directions:**

Here are the steps that must be followed to make herbal soap at home:

1. Melt the soap base in the double boiler setup. Now put all the ingredients like red lentils powder, rice powder, glycerine, and turmeric powder one by one in the soap base except the essential oils.
2. Mix the ingredients till they blend together.
3. Now add the essential oils into the mixture and continue stirring the mixture.
4. Pour the hot mixture into the silicon moulds to avoid the lumps and breakage in between the soap and tap the moulds slightly to avoid the air bubbles.
5. Let the mixture cool and set for atleast 1 to 2 hours at normal room temperature.
6. Remove the herbal soap after an hour and pack it into well closed container and label it properly.

(Note: Avoid the direct contact with sunlight or extreme heat conditions.)



● **Benefits of herbal soap:**

- 1) **Skin Brightening:** Rice has skin brightening properties. Therefore, you can use a rice soap recipe to get a natural glow to your face.
- 2) **Moisturising properties:** Rice milk is loaded with moisturising properties. Its rich content of vitamins and minerals make it ideal for revitalising your skin health. It also controls sebum secretion and keeps your face hydrated without making it oily or greasy. Therefore, rice soap recipes can prove to be ideal for those with oily skin.
- 3) **Covers Imperfections:** Rice Soap hides skin imperfections like dark spots, scars, etc. due to its skin lightening properties. It can also be used to make dark lips pink. It also soothes your skin and covers all its imperfections to provide you with a clear and even skin tone.
- 4) **Natural:** Rice soap ingredients are totally natural and healthy for your skin. Therefore, you may use rice water soap recipe as an alternative to commercial soaps and face cleansers. Rice soap is safe for your skin and restores its natural health and glow.
- 5) **Cleanses Skin:** Rice soap possesses skin cleansing properties. It can enter into the skin pores to eliminate dust, oil, grime, and other toxins. You can make a body scrub by mixing it with almond or gram flour. These properties of rice soap recipes ideal for detoxifying your skin.

● **Evaluation Test:**

- 1) **Determination of Organoleptic Characteristics:** Clarity and colour was checked by naked eyes against the white background, and the odour was smelled.



- 2) **Size and shape Determination:** The soap diameter of the size of 8.4 cm, with a thickness of 2.6 cm, which is round-shaped, was chosen for the preparation of soap bars. This was chosen, as this size is ideal in

regular usage to apply on the affected skin parts of the body.

3) Thickness determination: The thickness was determined with the help of a screw gauge which is pre-calibrated. The thickness was measured, by observing the thickness at five different parts of the soap.

4) Weight determination: The weight was determined by using a Digital weighing balance. The weight observed was 52.65 gm.

5) Foam Height: 23 0.5gm of the sample of soap was taken and dispersed in 25 ml of distilled water. Then, transferred it into 100 ml measuring cylinder; the volume was made up to 50 ml with water. 25 strokes were given and stand till aqueous volume was measured up to 50 ml and measured the foam height, above the aqueous volume⁹.



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6) **Foam Retention:** Prepared the 25 ml of the 1% soap solution and transferred it into the 100 ml measuring cylinder. Then the cylinder was shaken 10 times. The volume of foam was recorded at one minute for 4 to 5 minutes.

7) **pH TEST:** The pH test was performed for all the formulations. Each formulation of soap solution was dissolved in 20ml of distilled water and tested for pH with the help of a digital pH meter. The measurement of pH of all the formulations was done in the previously calibrated pH meter and pH value was 8.

● **Conclusion:**

The plant *Lens Culinaris*, *Oryza Sativa*, Glycerine, Vitamin e oil, Turmeric powder and Sandalwood oil were used and subjected to various evaluation test according to previous research the anti-oxidant and de-tanning activity of red lentils and rice were studied. The prepared formulation when tested for different test gave good results. It does not give any irritancy to skin and it was determined by using this soap personally hence it is proved that soap does not give any irritancy to skin. Furthermore the prepared soap were standardized by evaluating various physiochemical properties such as pH appearance, odor in which they exhibit satisfactory effect.

● **Acknowledgement:**

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