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Formulation and Evolution of Turmeric Sendalwood Cream

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Abstract: *The primary objective of this research is to formulate and evaluate a polyherbal cream utilizing the synergistic effects of Turmeric (Curcuma longa) and Sandalwood (Santalum album). This study focuses on developing a stable, semi-solid formulation designed to provide therapeutic benefits such as anti-inflammatory, antiseptic, and skin-brightening properties. The formulated cream was subjected to various evaluation parameters, including physical appearance, pH level, spreadability, consistency, and accelerated stability studies.*

The selection of Turmeric and Sandalwood is based on their long-standing traditional medicinal use for treating skin disorders and enhancing complexion. The results of the evaluation indicate that the cream is non-greasy, easily washable, and maintains its physicochemical integrity under varying conditions. This research concludes that the combination of Turmeric and Sandalwood extracts provides an effective herbal alternative for skin nourishment and protection against environmental stressors..

Keywords: Herbal Cream, Turmeric (Curcuma longa), Sandalwood (Santalum album), Formulation, Skin Brightening, Evaluation Parameters

I. INTRODUCTION

Cosmetics are specialized products utilized primarily for enhancing skin aesthetics and facilitating deep purification. The term “cosmetic” finds its roots in the Greek word “cosmetics,” which means “to adorn.” Among these, herbal creams serve as a vital bridge between traditional botanical knowledge and modern dermatological care. A polyherbal cream utilizing turmeric (Curcuma longa) and sandalwood (Santalum album) represents a synergistic approach to skincare, combining potent anti-inflammatory and antiseptic properties.

Characteristics of Turmeric and Sandalwood Cream

This formulation is designed as a semisolid emulsion, typically of the water-in-oil (w/o) or oil-in-water (o/w) variety, intended for external topical application.

Turmeric Component: Known for its active compound, curcumin, it provides natural radiance, reduces acne, and accelerates wound healing.

Sandalwood Component: Acts as a natural coolant and astringent, helping to soothe skin irritation and maintain a youthful, even complexion.

Functional Benefits

The primary purpose of this cream is to provide a protective barrier against environmental stressors and climatic conditions while delivering therapeutic botanical extracts. Key benefits include: Emollience: Replenishing moisture in dry skin without excessive greasiness. Therapeutic Action: Aiding in the alleviation of conditions such as acne, eczema, and minor skin rashes.

Hydration: The water phase ensures immediate skin hydration, while the oil phase facilitates deep permeation through the epidermis via natural pores.

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Formulation and Evaluation Goals

The principal goal of this project is to develop a stable herbal formulation that maximizes the bioavailability of turmeric and sandalwood. Evaluation of the cream focuses on parameters such as:

Physical Stability: Ensuring no phase separation or change in consistency. pH Compatibility: Matching the natural acidic mantle of the human skin.

Spreadability and Washability: Ensuring ease of application and effortless rinsing with water. By leveraging these natural ingredients, the formulation aims to offer a holistic alternative to synthetic creams, focusing on safety, efficacy, and enhanced facial radiance.

THE ANATOMY OF SKIN:

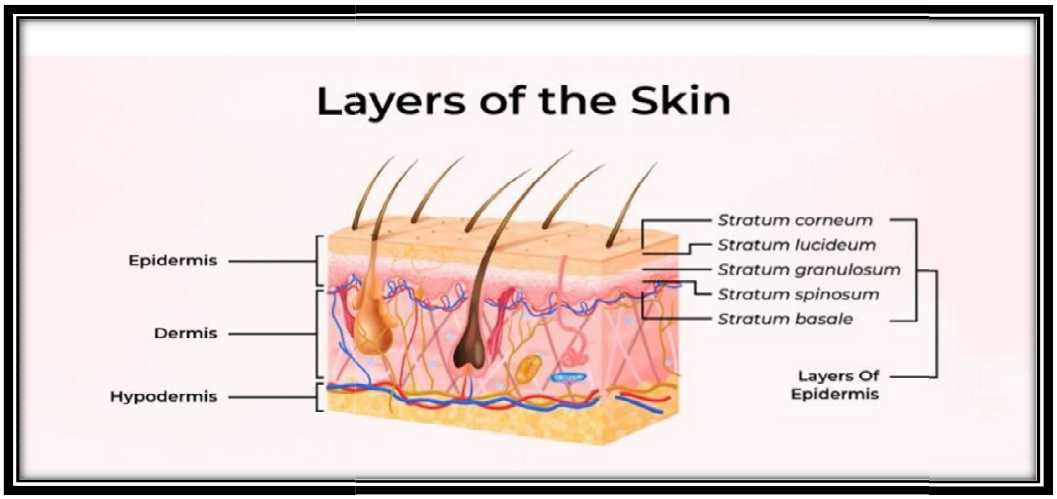

Fig01 : Structure of skin

II. LITERATURE OF REVIEW

Roy et al. [2015]

Turmeric is recognized as a traditional medicinal herb and coloring agent used for centuries in India for skin health. It possesses significant anti-inflammatory and antioxidant properties, making it effective for treating skin diseases, healing wounds, and reducing localized inflammation from burns or acne. In cosmetic formulations, turmeric masks and creams are used to rejuvenate the skin, reduce redness, and improve overall complexion.

K. Sahu et al. [2022]

Herbal cold creams are typically water-in-oil (w/o) emulsions designed to provide a cooling effect as water gradually evaporates from the skin. Formulations incorporating sandalwood powder utilize its traditional therapeutic properties, including antimicrobial and cooling effects. Sandalwood is widely used in Ayurvedic practices to soothe skin irritation, reduce blemishes, and impart a natural glow. Evaluation of these creams involves testing for pH (ideally 4.6–6.0), viscosity, spreadability, and stability to ensure they provide a protective barrier against moisture loss.

Hake Anushka Hanumant et al . [2024]

The beauty and fashion industries are starting to use more and more herbal cosmetics. The goal of the current study is to create and assess a herbal cream that contains extracts from natural ingredients including aloe Vera. Various kinds of oil in water (O/W) herbal creams are made by varying the ingredient concentrations. Every formulation was assessed based on several factors, including pH; viscosity, spreadability, and stability were all looked at. Formulations ought to

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have no negative side effects. In irritancy testing, the formulation exhibits no signs of redness, edema, inflammation, or irritation. It is safe to use these formulations on skin. According to these research, the cream's base and extract composition are safer and more stable, and they may even have a synergistic effect.

Prashant Melgar et al . [2025]
Cosmetics are the products which are generally used to beautify the skin and also to purify the skin. The cosmetics are the word derived from Greek word – „cosmetics'" which means to adorn. Cold cream is the water in oil emulsion. Cold cream gives the prolonged contact time in the site of application as compared to the other semisolid dosage form or formulation. They give elegancy to the skin and it is not that much greasy. Due to the oil phase, it gives an emollience to the skin. The function of the cold cream is for restoring moisture to dry skin, it allows to eliminate the waste materials from the pores and also cools the body. It is easily watered washable and easy to wash away. They are non-irritating when applied on the skin. The water phase gives extra conservation to the skin.

Adhao et al. (2025):
Evaluated a polyherbal cream incorporating turmeric, sandalwood, and other natural extracts. The study confirmed that turmeric acts as a potent antiseptic and skinwhitening agent, while sandalwood oil enhances the skin's natural glow and provides essential emollient properties.

Somnath S Davikhar et al. | 2023 |
Herbals cosmetics are products that are used to improve one's look. The goal of the research was to develop a herbal cream for moisturizing, nourishing, whitening, and treating various skin diseases. Curcuma longa (Turmeric powder), Carica papaya (Papaya), Aloe barbadensis (Aloe-vera leaves), Azadirachta indica (Neem leaves), and Ocimum sanctum (Tulsi leaves) are some of the basic drugs used to make the cream. The selection of components is based on the agents' various therapeutic characteristics. Various evaluation parameters used to the cream.

III. AIM AND OBJECTIVE

AIM: FORMULATION AND EVALUATION OF TURMERIC SANDALWOOD CREAM

OBJECTIVE:
Natural Moisturization: To formulate a turmeric and sandalwood cream that provides a safer, chemical-free way to moisturize and deliver a soothing, cooling effect to the skin.
Anti-Aging & Repair: To utilize the antioxidant properties of turmeric and the skin-regenerative qualities of sandalwood to prevent dehydration and signs of aging.
Environmental Protection: To develop a stable emulsion that acts as a shield, keeping the skin safe from environmental pollutants and harsh weather conditions.
Skin Nourishment: To provide essential nourishment to the skin layers using the bioactive compounds found in turmeric (curcumin) and sandalwood oil.
Barrier Formation: To create an effective protective barrier on the skin surface to lock in moisture and maintain skin elasticity.
Physical Evaluation: To evaluate the formulated cream for various physicochemical parameters, including pH, spreadability, viscosity, and stability.
Safety Assessment: To ensure the formulation is non-irritating and safe for topical application through skin sensitivity testing.

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Plant profile:
Turmeric
Synonym: curcuma, Curcuma aromatic, Curcuma domestica, curcuma longa, curcuma longa rhizome, curcumin, curcumine, curcuminoid.
Biological source: Curcuma longa Linn. (syn. C. domestica Valeton) is the plant whose dried rhizome is used to make turmeric.
Taxonomy Classification:
Kingdom :- Plantae
Division :- Magnoliophyta
Class :- Liliopsida
Subclass :- Zingiberidae
Order :- Zingiberales
Family :- Zingiberaceae (Zinziberaceae)
Genus :- Curcuma
Scientific name :- Curcuma Longa
Local Name :- Haldi, Haldar, Turmeric
English Name :- Turmeric
Useful Organ :- Underground stem, Tubers, Rhizome
Chemical components: essential oil (6%), and curcuminoids (5%).
Chemical Tests
Powdered drug with sulphuric acid gives a crimson colour.
The aqueous solution of turmeric with boric acid gives a reddish-brown colour which, on addition of alkali, changes to greenish-blue.
With acetic anhydride and concentrated sulphuric acid, it gives a violet colour.
When this test is observed under ultraviolet light, red fluorescence is seen.

Uses
Turmeric is used as a condiment or spice, and colouring agent, especially for ointments and creams.
Chemically, it is used for the detection of boric acid. It is antiseptic and antiinflammatory too.
Curcumin is also a powerful antioxidant.
Turmeric/curcumin are official in various pharmacopoeias. Apart from traditional uses, curcumin has been proved as an anti-inflammatory drug.
Antiarthritic agent has been isolated from C. aromatica. In China, C. wenyujin (C. aromatica) has been used in cervical cancer.

SANDAL WOOD OIL
Synonym: Sandal wood, Chandan, Santalum, Santali lignum.
Biological source: Sandalwood oil is obtained by steam distillation of the heartwood of Santalum album Linn. (Fam. Santalaceae).

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Fig SANDAL WOOD

Taxonomy Classification:

Kingdom Plantae
Division Mangoliphyta
Class Mangoliopsida
Subclass Rosidae
Order Santalales
Family Santalaceae
Genus Santalum
Scientific name Santalum album
Local Name Chandan Gandhamu
English Name Sandalwood
Useful Organ Heartwood.

Chemical Constituents

The oil consists primarily of a mixture of sesquiterpene alcohols. The key components include: Santalols (approx. 95%): The oil contains about 95% of two isomeric sesquiterpene alcohols: -Santalol: Santalol.

Other Compounds: Aldehydes: Santalol , Hydrocarbons: Santene, -santalene, and santalene. ,Ketones: Santenone and santalone.

Acids: Teresantalic acid (teresantalol).

Uses

Sandal wood oil is used for symptomatic treatment of dysuria and in diminishing the frequency of micturition marked in the tuberculosis of the bladder.

It is mainly used as a perfume in preparation of cosmetics and incense sticks.

Used in cosmetics, Perfumery. Treatment of dysuria and in diminishing the frequency of micturition

IV. MATERIAL &METHOD

List of Ingredients

Ingredient	Category	Quantity 100g) (For	F2
Turmeric extract	Active ingredient	2.0g	Antiseptic Anti-inflammatory

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Sandalwood oil	Herbal extract	1.2ml	Skin radiance Moisturizing
Aloevera gel	Herbal Extract		
Steric acid	Emulsifier Base	5.0 – 15.0g	Control consistency and Texture
Bees Wax	Thickening Agent	10.0 – 12.0g	Provide Stability and Base Structure
Liquid Paraffin	Emollient	0.7 – 15.0g	Soften skin and prevent moisture loss
Glycerine	Humectant	0.5 – 7.0g	Keep skin hydrated
Borax	Buffering Agent	0.1-1.0g	Maintain PH and aids Emulsification
Methyl Paraben	Preservative	0.15 – 0.2g	Prevent Microbial Growth
Rose water	Fragrance	qs	Provide Pleasant odour and base
Distilled water	Vehicle	Qs to 100g	Solvents base for water phase

Table 1: Herbal ingredients with their category and quantity.

Methods

Maceration process:

About 1 gm of dried Turmeric and Sandalwood oil mixed with 96% of ethanol into the separate beaker. Then stirred gently for 30 s then stored in the room for 24 hours. The maceration result filtered using Whatman No. 1 filter paper then evaporated using water bath until thick extract was obtained.

Extraction Labels

Turmeric extraction

1)Turmeric Extraction Combine 10 grams of turmeric powder with 50 milliliters of isopropyl alcohol in A flask. Shake thoroughly and heat in a water bath at a temperature ranging from 80 to 100 C° CelsilusFor a duration of 5 to 10 minutes. Subsequently, filter the mixture to acquire the turmeric extract. (6)

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Figure : Turmeric Extraction

Preparation of oil phase

In a borosilicate glass beaker, heat the liquid paraffin and beeswax to 75 °C and maintain it there.

Preparation of aqueous phase

Dissolve the methylparaben and borax in the distilled water in another beaker. In order to produce a clear solution, heat the mixture to 75 °C.

Addition of aqueous phase to oil phase

The aqueous phase was added to the oil phase dropwise in a mortar with continuous stirring at 75 °C. Next, then add the following ingredients:

Aloe Vera gel, Turmeric extract, sandalwood oil

Then, intensely stir the ingredients until a smooth cream forms. For scent, add a few drops of rose oil.

Physical Evaluation of Cream:

• A formulation of herbal cream was assessed using the physical characteristics listed below:

Colour: Through visual inspection, the hue of the cream was determined to be creamy.

Odour: It was discovered that the smell of cream was a feature.

State: A visual inspection of the cream was conducted. The semi-solid form of the cream is displayed in the table.

Consistency: The formulation was tested by physically rubbing cream on the hand. The consistency of the cream is smooth.

Washability: After applying the mixture to the skin, the ease of washing with water was assessed.

Non irritancy test: The non-irritancy test was conducted on a formulation of herbal cream. There was no redness or irritancy throughout preparation. A 24hour observation of the condition was conducted.

PH: It was discovered that the formulation's PH was closer to that of skin, indicating that using it topically is safe.

Phase separation: The prepared cream was poured into a suitable wide-mouth container. The oil phase and aqueous phase separation were observable after 24 hours and were stored.

After apply on skin: After applying the recommended amount of cream, it was found that the emollience, slipperiness, and amount of residue left were sufficient.

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RESULT:

The physical evaluation parameters and effect

Physical evaluation table NO. 1

SR		
1	Colour	Bright Yellow
2	Odour	Pleasant Characteristics
3	Texture	Smooth and fine
4	State	Semisolid
5	Irritancy	No Irritancy
6	Wash ability	Easily washable with water
7	PH	6.8
8	Phase Seperation	No
9	Spreadability	Good, Spread easily without excessive drug
10	Viscosity	Suitable for Topical application
11	Stability Test	Stable at room temperature and Acceleration condition
12	Microbial test	Safe for use

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