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A REVIEW ON THE POTENTIAL OF THE *CURCUMA LONGA* AND *EULOPHIA HERBACEA* AS NATURAL AGENT USE IN THE FORMULATION OF HERBAL WET WIPES

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❖ Abstract

Curcuma longa (turmeric) is widely recognized for its diverse therapeutic properties. It has strong antioxidant, anti-inflammatory, antimicrobial, and anti dermatophytic (anti-fungal) effects, with curcumin being the primary active ingredient responsible for most of these biological actions. In herbal and traditional medicine, *Curcuma longa* is well established for external applications, often being used for the treatment of skin infections, wounds, ulcers, and inflammation. Its powder or pastes have also been included in cosmetic and cleansing regimens, making it a suitable natural agent for herbal wet wipes aimed at skincare, antimicrobial purposes, and soothing irritated or inflamed skin.

However, as of now, there is a lack of direct evidence from clinical studies specifically focusing on the use of *Curcuma longa* in commercially available herbal wet wipes. While its efficacy as an antimicrobial and soothing agent is established in creams and oils, more research is warranted to confirm optimal formulations, dosage, and safety for repeated use in wet wipes. On *Eulophia herbecea* there are currently no search results directly discussing its application or potential in wet wipes, nor is there readily available research tying it to topical or cleansing uses similar to those of *Curcuma longa*. Most literature focuses on its broader uses in traditional medicine and as part of herbal formulations but not specifically for wet wipes or external cleansing agents.

Key words :- Wet wipes, Anti-inflammatory Anti-oxidant,curcunma lounga ,eulophia herbacea ,Hygiene.

❖ Introduction

In recent years, There has a growing interest in the use of natural and plant based alternatives To Synthetic chemicals in Personal Products. Among these, herbal gained Popularity due to their potential for being gentle, eco-friendly and free from harsh preservatives.The rising demand for natural and safe ingredients in cosmetic and personal care products has propelled the exploration of herbal alternatives in formulations such as wet wipes. Wet wipes, widely used for cleansing, disinfecting, and skincare, have evolved from being mere convenience products to functional carriers of active ingredients. The incorporation of botanicals with proven therapeutic properties not only enhances product efficacy but also caters to the increasing consumer preference for plant-based solutions. Among the many medicinal plants with promising potential, species from the genera *Curcuma Longa* and *Eulophia Herbacea* have gained attention due to their rich phytochemical profiles and wide-ranging pharmacological activities. Curcuma, particularly *Curcuma longa* (turmeric), is a well-known rhizomatous herb extensively used in Ayurveda, Unani, and traditional Chinesen medicine.Turmeric, derived from the rhizomes of *Curcuma longa*, (family- *Zingiberaceae*) is a perennial plant having short stem with large oblong leaves, and bears ovate, pyriform or oblong rhizomes, which are often branched and brownish- yellow in colour. Turmeric a native of South-East Asia, is used as a food additive (spice), preservative and colouring agent in Asian countries including China, Bangladesh and South East Asia. It is primarily cultivated in China, Taiwan, Sri Lanka, Bangladesh, Burma (Myanmar), Nigeria, Australia, West Indies, Peru, Jamaica and some other Caribbean and Latin American countries. Accounting for about 78 percent of world turmeric production, India is the largest producer of turmeric 3. It is also the biggest consumer and exporter of turmeric.

Turmeric is considered as auspicious and is a part of religious rituals. In old Hindu medicine, it is extensively used for the treatment of sprain and swelling caused by injury. Its bioactive constituents—primarily curcuminoids and essential oils—are renowned for their antimicrobial, anti-inflammatory, antioxidant, and wound-healing properties, making it an ideal candidate for topical applications. *Eulophia*, a lesser-known genus belonging to the Orchidaceae family, has shown emerging therapeutic potential. *Eulophia herbecea* is believed to be an excellent health-promoting agent Rizhomes/tubers of Amarkand are routinely consumed by the tribal parts of India as food as well as a therapeutic entity for better health and longevity Species such as *Eulophia ochreata* and *Eulophia nuda* have been traditionally used for their antimicrobial, analgesic, and rejuvenating effects. Phytochemical investigations reveal the presence of alkaloids, sterols, flavonoids, and phenolics, which may contribute to skin protection and healing.

A detailed phytochemical and pharmacognostic assessment of Curcuma and Eulophia species is therefore essential for their scientific validation and formulation into effective, safe, and marketable wet wipes. This review aims to consolidate current knowledge on the phytochemical constituents and pharmacognostic profiles of Curcuma and Eulophia species, while exploring their potential integration into herbal wet wipe formulations for enhanced skin health and hygiene.

❖ Anatomy and Physiology of Skin:

The skin is the largest organ of the body, accounting for about 15% of the total adult

body weight. It has a surface area of about 1.5 to 2 m^3 in adults and it includes glands, hair and nails. It performs many vital functions, including protection against external physical, chemical, and biologic assailants, as well as prevention of excess water loss from the body and a role in thermoregulation. The skin is continuous, with the mucous membranes lining the body's surface.

The integumentary system is formed by the skin and its derivative structures. The skin is composed of three layers: the epidermis, the dermis, and subcutaneous tissue. The outermost level, the epidermis, consists of a specific constellation of cells known as keratinocytes, which function to synthesize keratin, a long, threadlike protein with a protective role. The middle layer. the dermis, is fundamentally made up of the fibrillar structural protein known as collagen. The dermis lies on the subcutaneous tissue, or panniculus, which contains small lobes of fat cells known as lipocytes. The thickness of these layers varies considerably, depending on the geographic location on the anatomy of the body. The eyelid, for example, has the thinnest layer of the epidermis measuring less than 0.1 mm, whereas the palms and soles of the feet have the thickest epidermal layer, measuring approximately 1.5 mm. The dermis is thickest on the back, where it is 30-40 times as thick as the overlying epidermis.

❖ Structure of Skin:

The human skin structured of following layers-

1. Epidermis
2. The Dermal-Epidermal Junction
3. Epidermal Appendages
4. Dermis
5. Subcutaneous
6. Fat

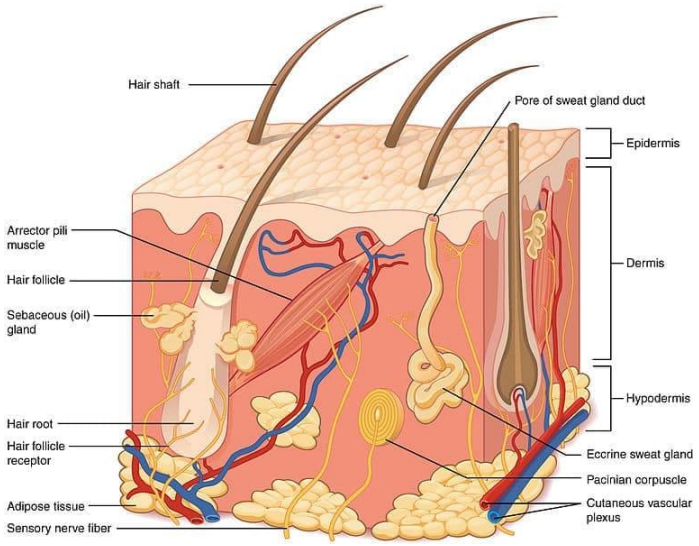

Fig.No.1. Anatomy Of Skin

1. WET WIPES

Wet wipes, also known as moist towelettes or wet tissues, are small pieces of nonwoven fabric pre-moistened with a cleansing or disinfecting solution. They are widely used for personal hygiene, baby care, cosmetic purposes, surface cleaning, and medical disinfection.

Their convenience, portability, and ready-to-use nature make them a popular alternative to traditional washing methods.

I. Component of wet wipes

Component	Function
Nonwoven Fabric Base	Acts as the wipe material; made from viscose, polyester, polypropylene, or blends. Provides softness, strength, and absorbency.
Cleansing/Disinfecting Solution	Contains water (as solvent) plus ingredients like surfactants, humectants, preservatives, and fragrances.
Humectant	Prevent the wipe from drying out (e.g., glycerin, propylene Glycol)
Preservatives	Prevent microbial growth in the moist environment (e.g.,noxyethanol).
Fragrances & Soothing Agents	Enhance user experience (e.g., aloe vera, chamomile extract).

II. Types of Wet Wipes

1. Baby Wipes: Mild and gentle, formulated for sensitive skin.
2. Cosmetic Wipes: Used for makeup removal, cleansing, or exfoliating.
3. Antibacterial/Disinfectant Wipes: Contain alcohol or antimicrobial agents for sanitizing hands or surfaces.
4. Personal Hygiene Wipes: For refreshing and cleaning the body when water isn't available.
5. Medical/Clinical Wipes: Used in hospitals for disinfection or pre-surgical cleaning.
6. Household Wipes: For surface cleaning (kitchen, bathroom, electronics).

III. Manufacturing Process

1.Preparation of Fabric:

Nonwoven material is produced via spunlace or spunbond methods.

2. Preparation of Lotion:

The cleansing or disinfecting solution is formulated and sterilized.

3. Impregnation:

The fabric is cut and impregnated with the solution in controlled conditions.

4. Folding & Packaging:

Wipes are folded, stacked, and packed into sealed containers or sachets to prevent drying.

IV. Quality Control Parameters.

Parameter	Description
1. pH	Should be skin-friendly (usually 4.5–6.5).
2. Viscosity of Solution	Affects application and feel.
3. Microbial Limit Test	Ensures product is free from harmful microorganisms.
4. Moisture Content	Determines shelf life and usability.
5. Tensile Strength	Measures the durability of the wipe material.
6. Packaging Integrity	Ensures wipes remain sterile and moist.

V. Advantages

i Convenient and easy to use.

ii Portable and disposable.

iii Provide instant cleansing/disinfection.

iv Useful in travel and emergency situations.

v Variety of formulations available for different needs.

VI. Disadvantages

i Non-biodegradable wipes cause environmental pollution.

ii Can clog sewage systems if flushed.

iii Skin irritation or allergy possible due to chemicals or preservatives.

iv High cost compared to reusable alternatives.

VII. Recent Developments

i. Introduction of biodegradable and flushable wipes using natural fibers (e.g., bamboo, cotton, cellulose).

ii. Alcohol-free formulations for sensitive skin. iii. Eco-friendly packaging innovations.

iv. Enhanced antimicrobial properties using natural extracts (e.g., tea tree oil, neem).

VIII. Applications

i Personal and baby hygiene.

ii Makeup removal and skincare.

iii Disinfection in healthcare and food industries.

iv Household and surface cleaning.

v Travel and outdoor use.

2. PLANT PROFILE

A) CURCUMA LONGA

Characteristic	Description
Scientific Name	*Curcuma longa*
Common Name	Turmeric
Family	*Zingiberaceae*
Plant Type	Perennial herb
Color of Rhizome	Bright yellow to orange
Color of Rhizome	Curcumin demathoxycurmin Turmerone
Medicinal Properties	Anti-inflammatory, Antioxidant
Traditional Uses	Used in Ayurveda, skin, and issues
Solubility	Poor water solubility
Geographical Origin	Native to South Asia

B) EULOPHIA HERBACEA

Characteristic	Description
Scientific Name	*Eulophia herbaceae*
Common Name	Wild Eulophia, Ground Orchid
Family	*Orchidacae*
Plant Type	Terrestrial herbaceous orchi
Medical Properties	Tonic, rejuvenative, aphrodisiac Anti-inflammatory
Soil Preference	Well-drained, loamy to sandy soil
Uses	Traditional medicine, edible in Some areas
Active Constituent	Alkaloids, glycosides, phenolics (varies by region)
Cultural Significance	Used in Ayurvedic and folk Medicine

❖ Ideal properties

The ideal combined properties of wet wipes containing Curcuma longa (turmeric) and *Eulophia herbacea* would integrate the complementary skin-beneficial effects of both plants:

1.Anti-inflammatory:

Both ingredients help soothe and reduce skin inflammation and irritation, making the wipes gentle and calming on sensitive skin.

2.Antimicrobial and antibacterial:

They provide protection against bacteria and microbes, ensuring the wipes effectively cleanse the skin and prevent infections.

3.Antioxidant:

Rich in antioxidants like curcumin in turmeric and flavonoids in *Eulophia herbacea*, the wipes would protect skin cells from oxidative stress and environmental damage.

4.Skin healing and repair:

Turmeric is known for promoting wound healing, skin regeneration, and improving skin tone; *Eulophia herbacea* also has traditional use in wound healing and microbial infection control.

5.Skin soothing and nourishing:

The combined extracts support skin hydration, reduce dryness, and improve skin texture and appearance.

❖ Advantages of wet wipes combining *Curcuma longa* and *Eulophia herbacea*

1.Anti-inflammatory effects:

Soothes irritated and inflamed skin effectively.

2.Antimicrobial protection:

Prevents bacterial and fungal skin infections.

3.Antioxidant synergy:

Protects skin cells from damage caused by oxidative stress, potentially slowing skin aging.

4.Improved skin healing:

Aids in the quicker recovery of minor skin injuries.

5.Gentle on sensitive skin:

Offers cleansing with medicinal benefits without harsh chemicals, making it ideal for sensitive skin.

6.Potential additional benefits:

While the primary focus is skin health, the ingredients have traditional uses for other health issues like managing diabetes.

❖ Disadvantages of *curcuma longa* and *Eulophia Herbecea* wet wipes

1. Skin irritation: itching, burning, redness, hypersensitivity
2. Dryness and flakiness from removing natural skin oils
3. Persistent yellow staining on skin. Allergic reactions to turmeric or preservatives
4. Not suitable for all skin types; may worsen certain skin conditions.
5. Rare systemic effects if excessively or improperly used.
6. Possible allergic reactions or skin irritation from herbal ingredients.
7. Quality or formulation issues causing discomfort or infections
8. Hygiene and environmental concerns from improper use or disposal.

3. Material and methods of preparation

- **Ingredient**

I *Eulophia herbacea*

ii Curcuma longa

iii Acetone

iv Trichloroacetic acid

v Ethanol

vi Glycerine

vii Thiomersal (preservative)

viii Non-woven fabric

- **Methods of preparation**

preparation process:

Preparation of *Eulophia herbacea* Mucilage Extract

1. Collect and wash fresh *Eulophia herbacea* tubers.
2. Crush and soak tubers in water (5-6 hours).
3. Boil (30 minutes) and let stand (1 hour) to release mucilage.
4. Filter and precipitate mucilage with acetone.
5. Dry and grind mucilage into a fine powder.

❖ **Preparation of Turmeric Powder**

1. Dry and grind fresh turmeric rhizomes into a fine powder.
2. Optionally, extract curcumin using ethanol-water solvent.

❖ **Formulation of Wet Wipes**

1. Hydrate *Eulophia herbacea* mucilage powder in water to form a gel.
2. Add glycerin and turmeric powder/extract.
3. Incorporate preservatives.
4. Impregnate gel onto non-woven fabric sheets.
5. Package in moisture-retentive packaging.

This natural, herbal wet wipe formulation combines the benefits of *Eulophia herbacea* mucilage and turmeric for skin care.

4.EVALUATION PARAMETERS

A. Physiochemical Parameters

1. pH - it should be skin friendly (4.5-6.5)

2.Viscosity: it ensures the appropriate flow of the solution on the infected area

3.Appearance: clear

4.Odor: pleasant

5.Color: It should remain stable

6.Moisture content: It ensures sufficient wetness

B. Microbiological Testing:

It is essential to ensure their safety efficacy and specially those designed for disinfecting or use on sensitive area or infected area

C. Phytochemical evaluation:

It ensures the presence of active compounds like flavonoids, tannis, alkaloids, terpenoids

D. Antimicrobial efficacy:

It evaluates their ability to reduce or inhibit the growth of microbes which may include the fungi, virus

E. Skin compatibility Tests:

It ensures the compatibility of wet wipes to the skin or infected area

It also confirms the safety of products.

F. Stability studies:

It determine the shelf life of the wetwipes and ensure their safety efficacy and quality of wet wipes throughout their intended life span

5.DISCUSSION:

The paper discusses the rising interest in herbal and plant-based alternatives to synthetic ingredients in personal care products, especially wet wipes. It highlights that the increasing consumer preference for eco-friendly, gentle, and effective skin-care solutions has driven exploration into botanicals like *Curcuma longa* and *Eulophia herbacea.*

Turmeric, known for its bioactive compounds such as curcuminoids and essential oils, demonstrates powerful antimicrobial, anti-inflammatory, antioxidant, and wound-healing properties—making it highly suitable for topical applications. Meanwhile, *Eulophia herbacea*, although less studied, shows promising traditional and pharmacological potential due to its rich content of alkaloids, phenolics, and flavonoids. These compounds

offer antibacterial, antifungal, analgesic, and skin-regenerating effects. The discussion emphasizes the integration of plants into wet wipe formulations as a way to create multifunctional, skin-friendly, and sustainable hygiene products. It also underscores the need for comprehensive evaluation—through physicochemical, phytochemical, microbiological, and skin compatibility tests—to validate their safety, efficacy, and stability in real-world applications. Ultimately, the paper suggests that herbal wet wipes combining *Curcuma longa* and *Eulophia herbacea* can offer a natural alternative to chemical-based wipes, but further clinical and formulation research is essential to ensure their effectiveness and commercial viability

6. RESULT & CONCLUSION

The review of existing literature and scientific data indicates that both *Curcuma longa* and *Eulophia herbacea* possess significant potential as natural agents in the formulation of herbal wet wipes. The findings show that: *Curcuma longa* contains active compounds like curcumin, which demonstrate strong antimicrobial, anti-inflammatory, antioxidant, and wound-healing properties, making it highly suitable for skin applications. *Eulophia herbacea*, though less researched, has shown promising antibacterial, antifungal, and skin-regenerating effects in preliminary studies and traditional uses. Both herbs are biocompatible, non-toxic in topical applications, and can serve as effective alternatives to synthetic chemicals in wet wipe formulations. Their synergistic potential, when combined, could enhance the overall effectiveness of herbal wet wipes in providing cleansing, antimicrobial protection, and skin nourishment The exploration of *Curcuma longa* (turmeric) and *Eulophia herbacea* as potential ingredients in herbal wet wipe formulations reveals promising natural alternatives to synthetic antimicrobial and skin care agents. Both plants are rich in bioactive compounds such as curcuminoids, flavonoids, and phenolics, which exhibit strong antimicrobial, anti-inflammatory, antioxidant, and skin-soothing properties. These attributes make them ideal for applications in personal hygiene products, particularly in formulations designed to reduce skin irritation, promote skin health, and offer mild disinfection without harmful side effects. *Curcuma longa*, extensively studied for its medicinal and cosmetic benefits, provides broad-spectrum antimicrobial activity and is widely accepted in herbal formulations. *Eulophia herbacea*, though less explored, shows significant potential due to its traditional medicinal uses and emerging evidence of its pharmacological properties. In conclusion, integrating *Curcuma longa* and *Eulophia herbacea* into herbal wet wipes presents a sustainable, skin-friendly, and effective approach to modern hygiene needs. However, further clinical studies, formulation standardization, and safety assessments are essential to fully establish their efficacy and commercial viability in cosmetic and pharmaceutical applications.

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