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**Original Article**

# Exploring The Beneficial Effect of Aloe Vera, Green Tea, Turmeric and Frankincense in Topical Herbal Ointment for Skin Health

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**ABSTRACT:**
Topical ointments derived from medicinal plants like Aloe vera, turmeric, frankincense, andgreen tea are increasingly recognized for their therapeutic properties, including antibacterial, anti-inflammatory, and antioxidant effects. These natural remedies have a long history of usein traditional medicine and are now gaining prominence as alternatives to synthetic drugs. Their efficacy in treating a variety of skin and health conditions makes them valuable in both preventive and curative care. The resurgence of interest in plant-based ointments reflects abroader trend towards natural health solutions, emphasizing the importance of integrating ancient wisdom with modern scientific research. This approach not only addresses immediate health concerns but also promotes overall well-being, aligning with a growing preference for sustainable and holistic healthcare practices. The continued exploration and application of these natural remedies are crucial in advancing healthcare options that are both effective and environmentally responsible.

**Keywords:** Aloe Vera, Green Tea, Turmeric, Frankincense, Herbal Ointment.

## Introduction

An ointment is a thick, semisolid preparation applied topically to various body surfaces, including the skin and the mucous membranes of the eyes, vagina, anus, and nose. Ointmentscan be eithermedicated or non-medicated. Medicated ointments incorporate a medicinalsubstance that is dissolved, suspended, or emulsified in the base. These ointments servemultiple purposes when used topically, such as acting as protectants, antiseptics, emollients, antipruritics (anti-itch), keratolytics (exfoliating agents), and astringents[1]. These ointments are viscous, semisolid preparations applied externally on body surfaces such as the skin, andmucous membranes of the eyes, vagina, anus, and nose. Medicated ointments contain active medicinal ingredients that are mixed, suspended, or emulsified in an ointment base. Ointment bases are typically water-free and contain one or more chemicals in suspension, solution, or dispersion form.[2] Topical ointments with antibacterial properties are effective in treating and preventing infections caused by certain bacteria. Many of the topical medications available for treating skin-related conditions are produced through synthetic processes involving chemicals, which can lead to side effects. An alternative treatmentis the use of topical ointments containing extracts from medicinal plants. These ointments can help treat bacterial skin infections while reducing the need for oral antibiotics, which can contribute to the development of antibiotic-resistant bacteria.[3]

**Aloe Vera:**

The Aloe vera plant has been used for centuries & is well known for its health, medicinal, beauty, and skin care properties. The name Aloe vera is derived from the Arabic word 'Alloeh' meaning 'shining bitter substance' and 'vera' in Latin means 'true'. 2000 years agoonly Aloe vera was considered as the universal panacea by the Greek scientists.[4] Aloe vera is a hardy, long-lasting, tropical, drought-resistant succulent plant. It has played a significant role in traditional medicine systems, including Siddha, Unani, Ayurveda, and Homeopathy. These systems have extensively used aloe vera for its medicinal properties, leveraging its natural benefits in treating various ailments and promoting overall health**.** Aloe Vera is an exceptionally powerful and significant herbal plant, standing out among many other plants due to its numerous therapeutic activities and pharmacological effects for both humans and animals. It is also widely used for medicinal purposes across various cultural systems. Aloe Vera is a stemless or very short-stemmed plant that grows to a height of 60–100cm (24–39 inches) and spreads through offsets. The leaves are thick, fleshy and range in color from green to grey-green, with some varieties displaying white specks on their upper and lower surface. [5]

**Taxonomical Classification[4]**

| | |
|---|---|
| Clade | Angiosperms |
| Clade | Monocots |
| Order | Aspargales |
| Family | Asphodelaceae |
| Subfamily | Asphodeloideae |
| Genus | Aloe |
| Species | Aloevera |

**Botanical Description[5]**

The plant is either stem less or has a very short stem, measuring up to 25 cm in length, witharound 20 leaves forming a dense, thick rosette. The leaves can grow up to40-50 cm longand 6-7 cm wide. They are thick, fleshy, and capable of retaining water their upper surface is concave, grey-green in color, often with reddish hues, and younger plants are frequently dotted. The underside of the leaves is curved with a pale pink edge lined with small, pricklyteeth about 2 mm long, spaced 10-20mm apart. A singleleaf can weigh between 1.5 and 2kg.The roots of the aloe are generally brief and lay flat implanted within the earth.

**Chemical Composition[5]**

Species of aloevera contain vitamins such as Vit. A, Vit. C, Vit. E, Vit. B1, Vit. B2, Vit. B6,Vit. B12. Enzymes such as Lipase, cyclooxygenase, aliiase, oxidase, catalase, peroxidase, cellulase are also present in aloevera. The minerals in the form of calcium, chromium, selenium, copper, magnesium, manganese, potassium, sodium, zinc are present. Sugars in the form of monosaccharides (glucose and fructose) and polysaccharides (polymannose) are there. Presence of organic acids like sorbate, salicylic acid, uric acid is there. The presence ofanthraquinones like aloin, barbaloin, isobarbaloin, anthranol, aloe-emodin, ester of cinnamic acid, emodin makes the aloevera more effective.

**Extraction Methods:**

Extraction of aloe vera gel can be done by following methods: Liquid chromatography (LC),Size Exclusion Chromatography (SEC), Gas Chromatography-Mass Spectroscopy (GC-MS), Soxhlet extraction method, ultrasound technique, and microwave extraction method.

**Physicochemical properties[6]**
Fiber content: 0.074 to 0.088%
Refractive index: 1.3340-1.3355
Optical density: 1.020-1.437 abs
pH Value:3.5-4.7
Specificgravity: 1.0030-1.0070

**Pharmacological Properties[7]**
Burn and wound healing property, Moisturizing and anti-aging effect, Anti-oxidant effects, Anti-oxidant effects, Anti-diabetic effects.

**Marketed Formulation:**

| NO | Product name | Company name | Use |
|---|---|---|---|
| 1 | Aloe vera ointment | St. George's Homeopathy | As a Moisture for Dry Skin |
| 2 | Aloe vera Shampoo | Rivona Naturals | Deeply hydrating and purifying |
| 3 | Aloe vera face wash | Mama Earth | For youthful glow |
| 4 | Aloe vera juice | Krishna's Herbal And Ayurveda | Help to control acne |
| 5 | Aloe vera hair cleanser | Khadi Natural | For boost hair growth |

**Turmeric:**
*Curcuma longa*, commonly known as Turmeric, belongs to the Zingiberaceae family. Thisperennial, erect, and leafy plant features very large, lily-like leaves that can reach up to 1.2 meters in length. It has oblong, pointed leaves and funnel-shaped yellow flowers. Therhizome, which is the medicinal part of the plant, is typically boiled, cleaned, and dried to produce a yellow powder.[8] It is a perennial herb that grows to a height of 2–3 feet, featuring a short stem and clustered leaves. The rhizomes, which are short and thick, form the turmeric.[9] India is home to nearly 8% of the world's estimated biodiversity, with over 126,000 species. Of the more than 400 families of flowering plants globally, at least 315 arefound in India. Currently, herbal medicines and related products in the global market aresourced from Chinese, Indian, Arabic, and Western herbs. Turmeric holds a significant placein Indian culture, serving as a key ingredient in curry dishes and playing a role in various religious ceremonies. It is also a common component in many traditional remedies.[10] Turmeric is valued for its deep yellow colour (0.2-8% curcumin) pungency (2.2-4.2% termerol) and aromatic flavor of volatile oil (1.5-5%). During Vedic period turmeric referredas "earthy herb of the Sun" with the orange-yellow rhizome it was regarded as the "scaredspice"[11]

**Taxonomical Classification[8]**

| | |
|---|---|
| Kingdom | Plantae |
| Subkingdom | Tracheobionta-VascularPlants |
| Superdivision | Spermatophyta |
| Division | Magnoliophyta-FloweringPlant |
| Class | Lilliosida-Monocotyledons |
| Subclass | Zingiberales |
| Order | Zingiberales |
| Family | Zingiberaceae |
| Genus | CurcumaL.-curcuma |
| Species | Curcuma longaL. |

**Botanical Description[8]**
The fruit type of turmeric is tropical. The edible part of turmeric is fruit. The shape of fruit is oval

with 5 groves. The fruit per tree(annual) is about 200 pounds. The texture of turmeric is crisp. The taste of turmeric is sweet.

**Chemical Composition[8]**
Primarily phenolic compounds and terpenoids have been identified, including diarylheptanoids (including commonly known as curcumi-noids), diarylpentanoids, monoterpenes, sesquiterpenes, diterpenes, triterpenoids, alkaloid and sterols, etc.

**Extraction methods[12]**
Extraction of turmeric can be done by following methods: Steam cooking , HPLC, Solvent extraction by acetone, hexane, ethanol, Soxhlet extraction, Ultrasound assisted extraction, Microwave assisted extraction, Enzyme assisted extraction.

**Pharmacological Properties[13]**
Anti-inflammatory properties, Antioxidant, Hepatoprotective, Anticarcinogenic, Antidiabetic, Antidiabetic, Antimicrobial.

**Marketed Formulation:**

| NO | Product name | Company name | Use |
|---|---|---|---|
| 1 | Turmeric Skin Care Cream | Suvida care | For Acne or Pimple, Stretch markes |
| 2 | Turmeric essential oil | Actizeet | For digestive support, skin health and blood circulation |
| 3 | Organic Turmeric curcumin extract | Vegishake | Forradiant |
| 4 | Pure Turmeric Rose hip Mukhalaya Face oil | Nathabit Fresh Ayurveda | For clean clear skin of spots and quick relief from tanning and sun Damage |
| 5 | Turmeric Soap | Sunny Herbals | To protect and nourishes the skin, makes of its skin and glowing skin |

**Frankincense**
Frankincense has been grown in regions with a specific monsoon climate on the Arabian Peninsula, as well as in Somalia, Ethiopia, and India. For the past 5000 years, it has been traded along the Nabatean incense routes to Europe and China. Known also as olibanum, frankincense was highly valued for its rarity and high cost, symbolizing wealth and luxury. In antiquity, it was one of the most sought-after and precious commodities in Europe, contributing significantly to the prosperity of the Arabian Peninsula (Arabia Felix).[14] Frankincense has also attracted the attention of animal-origin food producers who are seeking natural supplements that promote high-yield production while keeping animals in good health, thereby enabling the production of healthy food.[15] The history and contemporary use of and trade in frankincense from B. papyri fer aare reviewed and techniques of harvesting, grading and sorting of frankincense are presented.[16] Frankincense has been employed since 2800 BCE and this plant is mentioned numerous times in ancient Egyptian medical records. It was employed in perfumes and as a burn incense along with being a component

for the preparation of balmandunguents for mummification. [17]

**Taxonomical Classification:[17]**

| | |
|---|---|
| Kingdom | Plantae |
| Clade | Angiosperms |
| Clade | Eudicuds |
| Clade | Rosids |
| Order | Sapindales |
| Family | Burseraceeae |
| Genus | Bosewellia |

**Botanical Description[18]**

**Tree:** Shrubs or small to medium trees, often with swollen trunks and peeling bark, produce aromatic, milky sap that hardens into gum-resin; wood ranges from soft to moderately hard.

**Leaves:** Deciduous leaves, clustered at shoot tips or alternately on young shoots, are usually imparipinnate with varied margins, often have gland-tipped and longer non-glandular hairs; stipules are absent.

**Flower:** Flowers are actinomorphic and bisexual, appearing with or before leaves in racemesor panicles. They have a cup-shaped 5-lobed calyx, 5 free petals, 10 stamens, and a multi-locular ovary with a simple style and varied stigma shapes**.**

**Fruits:** The fruit is a pear-shaped to obovoid capsule, often lobed or winged, that splits opento reveal a winged axis with one-seeded compartments, where seeds may have persistent wing sand lobed cotyledons.

**Chemical Composition[19]**

α-pinene(23.2%and6.3%),β-myrcene(4.4%and4.5%),limonene(22.4%and10.2%),α-copaene(1.6% and5.5%),β-caryophyllene(6.9% and16.9%),α-humulene(1.1% and5.2%); caryophylleneoxide(2.0%and13.1%).

**Extraction Methods[20]**

Extraction of turmeric can be done by following methods: Hydrodistillation, Microwave assisted extraction, GC-MS extraction.

**Physicochemical Properties[19]**

Specific gravity: 0.79±0.008
Kinematic viscosity: 0.54±0.008kg/m.s
Acid value: 14.19 ±0.138
Saponification value 143.056±2.065

**Pharmacological Properties[15]**

Antioxidant, Anti-inflammatory, Anti-fungal, Immunomodulators, Anticancer, Anti-arthritic.

**Marketed Formulation**

| No. | Product name | Company name | Use |
|---|---|---|---|
| 1 | Frankincense Incense Sticks | HEM Frankincense | For meditation home fragrance and aesthetic Reason |
| 2 | Frankincense Incense Bricks Refill Pack | Aroma fume India | For induce relaxation And positivity |
| 3 | Frankincense resins | Living words | For reduce stress and anxiety, boost immune system |

| | | | |
|---|---|---|---|
| 4 | Tamanu, Kakadu Plum and Frankincense Face Wash | Juicy chemistry Organic by nature | Regenerative cleanser, Promote skin tone |
| 5 | Remedies Frankincense Hydrating Cream(50g) | Tira | Moisturize and smooth for all type |

**Green Tea:**

Tea, derived from the leaves and buds of the *Camellia sinensis* plant, is the second most popular beverage in the world, drunk far more than carbonated soft drinks, beer, wine, and coffee combined [1-2]. Originally from China, tea has been popular throughout the world in the last two millennia. Although green tea has been associated with health benefits since it was first consumed, scientific research on the beverage and its components has only been conducted for the past thirty years or so. [21]Traditional Chinese and Ayurvedic medicine uses green tea mainly for its heart-healthy, diuretic, astringent, and stimulation in the absorption of cholesterol and lipids in the digestive tract(Koo,2004). Additionally, green tea may aid in the elimination of cholesterol from the body (Hawkins, 2007).[22] After water, tea is the most popular beverage in the world. Tea is a Chinese beverage that has become popular throughout the world in the last 2000 years. In ancient times, people in India, China, Japan, and Thailand. drank green tea. Green, black, and Oolong tea are consumed in various regions around the world, but among them, green tea has been demonstrated to have the most beneficial effects on human health.[23]

**TAXONOMICALCLASSIFICATION:[23]**

| | |
|---|---|
| Kingdom | Plantae |
| Order | Ericales |
| Family | Theaceae |
| Genus | Camellia |
| Species | C.sinesis |
| Binomialname | *Camelliasinensis*(L.)Kuntze |

**Botanical Description[23]**

When grown for its leaves, this evergreen shrub or small tree is often cut to a height of lessthan two meters (six feet). Its taproot is robust. With seven to eight petals, the yellow-white flowers have a diameter of 2.5 to 4 cm. The *Camellia sinensis* sand seeds Tea tree oil, an essential oil derived from the leaves of a distinct plant and used for medicinal and cosmetic purposes. The leaves measure 2–5 cm in width and 4–15 cm in length. For the purpose ofmaking tea, the young, light green leaves with short white hair on the underside are preferred. Deeper green leaves are older.

**Chemical Composition[23]**

**Polyphenols:** It mostly consists of flavonols, which are also referred to as catechins. Catechins are a type of polyphone found in teas. Catechin, gallaogatechin, epicatechin, epigallocatechin, epicatechin gallate, and apigallocatechin gallate (EGCG) are the six maincatechin chemicals found in green tea. The most widely known and potent polyphenol foundingreenteais called EGCG.

**Additional Polyphenols**: Only tea includes theogallin, which is found in dry green tea in amounts of 2% to 3%.

**Vitamins and Minerals**: Green tea contains several B vitamins and C vitamin. Other green tea ingredients include 6% to 8% of minerals such as aluminium, fluoride and manganese.

**Aminoacid:** Theanine (4-6%)

**Alkaloid:** Caffeine(3-4%), theobromine, theophylline and very small amount of other methylxanthines.

**Extraction Methods[24]**
The methods by which we can extract green tea are. Traditional maceration, Soxhlet Extraction, ultrasonication extraction, microwave assisted extraction, static and dynamic extraction technique.

**Physicochemical Properties[25]**
Solubility: 13.8 mg/ml Absorbance: 232nm and 271nm pH:5.3
Total polyphenols: 381.1 mg of gallic acid/gm of extract

**Pharmacological Propreties[26]**
Anti-cancer, Anti-diabetic, Anti-oxidant, Anti-microbial, Anti-hypertensive and cardiovascular activity.

**Marketed Formulation:**

| NO | Product name | Company name | Use |
|---|---|---|---|
| 1 | Natural green tea face wash | Lotus | Clarifies skin, removes dirt, tighten spores |
| 2 | Herbal Green Tea Extract 500Mg-80 Capsule | Simply Herbal | For speed up fat loss and stronger immune system |
| 3 | Himalayan Green Tea- 25 Tea Bags | Tea leaf & co | Improve immunity and regulate blood sugar level |
| 4 | Tulsi Green Tea Honey Lemon | Organic India | Stress relieving and up |
| | Stress Relieving & Uplifting Tea bags | | Lifting |
| 5 | The green tea seed serum | INCI Decoder | Moisture the skin and Antioxidant |

**CONCLUSION:**
Ointments made from medicinal plants such as Aloe vera, turmeric, frankincense, and green tea arehighly valued for their therapeutic benefits, including antibacterial, anti-inflammatory, and antioxidant effects. These natural alternatives to synthetic medications are effective in treating various skin andhealth conditions. Their longstanding use, along with modern applications, highlights the significance of natural remedies in supporting overall health and well-being.

**REFERENCE:**
1. Chhetri HP, Yogol NS, Sherchan J, Anupa KC, Mansoor S, Thapa P. Formulation and evaluation of antimicrobial herbal ointment. Kathmandu University Journal of Science, Engineering and Technology.2010;6(1):102-7.
2. Abhishek Y, Krishanu S. Formulation and evaluation of herbal ointment using Emblica officinalis extract. World Journal of Advanced Research and Reviews.2021;9(2):032-7.
3. Sekar M, Rashid NA. Formulation, evaluation and antibacterial properties of herbal ointment containing methanolic extract of Clinacanthus nutans leaves. International Journal of Pharmaceutical and Clinical Research.2016Aug;8(8):1170-4.
4. Lanka S. A review on Aloe vera-The wonder medicinal plant. Journal of Drug Delivery and Therapeutics.2018 Oct15;8(5-s):94-9.
5. Pegu AJ, Sharma MA. Review on Aloevera. Int J Trend Sci Res Dev.2019;3(4):35-40.
6. Chandegara VK, Varshney AK. Aloevera L. processing and products: a review.
7. Sharma P, Kharkwal AC, Kharkwal H, Abdin MZ, Varma A. A review on pharmacological properties of Aloe vera. Int J Pharm Sci Rev Res. 2014 Dec;29(2):31-7.
8. Yadav RP, TarunG. Versatility of turmeric: A review the golden spice of life. Journal of Pharmacognosy and Phytochemistry. 2017;6(1):41-6.

9. Sep 1;20(3-4):185-91 Gupta RK, Balasubrahmanyam L. The turmeric effect. World Patent Information.1998.
10. Kaur A. Historical back ground of usage of turmeric: A review. Journal of Pharmacognosy and Phytochemistry.2019;8(1):2769-71.
11. Mirjanaik RH, Vishwanath YC. Advances in production technology of turmeric. Journal of Pharmacognosy and Phytochemistry.2020;9(4):1198-203.
12. Kamble KJ, Ingale VM, Kaledhonkar DP. Comparative study of curcumin extractionfrom turmericvarieties grown in Maharashtra. African journal of food science. 2011 Nov 30;5(14):780-9.
13. Nisha J, Anbu N. Pharmacological properties of Turmeric: A review. World J. Pharm. Res. 2017 Jun21;6:2489-503.
14. Efferth T, Oesch F. Anti-inflammatory and anti-cancer activities of frankincense: Targets, treatments and toxicities. In Seminars in cancer biology 2022 May 1 (Vol. 80,pp.39-57). Academic Press
15. Al-Yasiry AR, Kiczorowska B. Frankincense– therapeutic properties. Advances in Hygiene and Experimental Medicine.2016 Jan4;70:380-91.
16. Gebrehiwot K, Muys B, Haile M, Mitloehner R. Introducing Boswellia papyrifera (Del.) Hochst and its non-timber forest product, frankincense. International forestry review. 2003Dec1;5(4):348-53.
17. Hussain H, RashanL, HassanU, Abbas M, Hakkim FL, Green IR. Frankincense diterpenes as a bio-source for drug discovery. Expert Opinion on Drug Discovery. 2022 May4;17(5):513-29.
18. Thulin M.The Genus Boswellia(Burseraceae): The Frankincense Trees. Acta Universitatis Upsaliensis;2020.
19. Author links open overlay panel S.F. Van Vuurena, G.P.P. Kamatoub A.M. Viljoenb.
20. Asad M, Alhumoud M. Hepatoprotective effect and GC-MS analysis of traditionally used Boswellia sacraoleogum resin(Frankincense) extractin. African Journal of Traditional, Complementary and Alternative Medicines.2015;12(2):1-5.
21. Cabrera C, Artacho R, Giménez R. Beneficial effects of green tea—a review. Journal of the American College of Nutrition.2006Apr1;25(2):79-99.
22. Ogle N. Green tea Camellia sinensis. Australian Journal of Medical Herbalism. 2009 Jan;21(2):44-8.
23. Sharma N, Deshpande S, Ganjoo N, Aman A. botanical description, phytochemistry, traditional uses, and pharmacology of green tea(camellia sinensis): an updated review.
24. Sarwa KK, Rudrapal M, Debnath M. Extraction of green tea leaves: The use of different methods, their optimization and comparative evaluation. Biosci. Biotechnol. Res. Asia.2013Jun;10(1):383-6.
25. Chen H, Zhang Y, LuX, Qu Z. Comparative studies on the physicochemical and antioxidant properties of different tea extracts. Journal of Food Science and Technology. 2012Jun;49:356-61.
26. ZhaoT, LiC, WangS, SongX. Green tea(Camellia sinensis):A review of its phytochemistry, pharmacology, and toxicology. Molecules. 2022 Jun 18;27(12): 3909