



A Review on Antifungal Geranium Soap

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ABSTRACT:

"The medicine are used to treatment of fungal infections that drugs called as a anti-fungal agents". Fungus in the soil, air and on our skin can cause yeast infections, ringworm infections, athlete's foot, nails and skin infections, eczema, psoriasis are the most serious problem because they affect peoples. Fungi grows as a yeast, molds or combination of both. Anti-fungal medicine include various types of formulation such as Soaps, Cream, Ointment, Gels, Powder and oral medicine. The herbal medicine. This formulation contains Geranium oil, Neem Oil, Coconut Oil, Castor oil, palm oil, orange oil, Glycerin, Steric Acid, Sodium Lauryl Sulphate, Turmeric Powder etc. are used as moisturizer, cleanser, toner, dry flaky skin, hardening agents. Most of commercial soaps contains chemical that can be harmful to skin. Hence use of natural herbal soap can be good alternative. The anti-fungal soap are formulated with the Geranium oil which helps to prevent the fungal infections. Formulation apply easy on affected area of body. There are numerous chemical toxins microorganisms prevent in the atmosphere may cause chemical infection and damage to skin, been tree has attracted world wide prominne to its wide rang of medicinal property of been leaves and it also used for the antifungal, antimicrobial, antibacterial, antimalarial. This formulation can be perform the evaluation test such as color, odor, test, pH, moisture content, foming index, foam retention time, saponification values etc. The advantages of anti-fungal soap of Geranium is to treat fungal infections. It may also useful for treating non fungal skin condition such as psoriasis and eczema. This plant-based formulation have gained increasing popularity amongs consumer as are safe effective, economic and less side effects.

Keywords: Antifungal Soap, Germanium oil, Neen Oil, Glycerine soap base, steric Acid, SLS, Turmeric, Antifungal Activities,

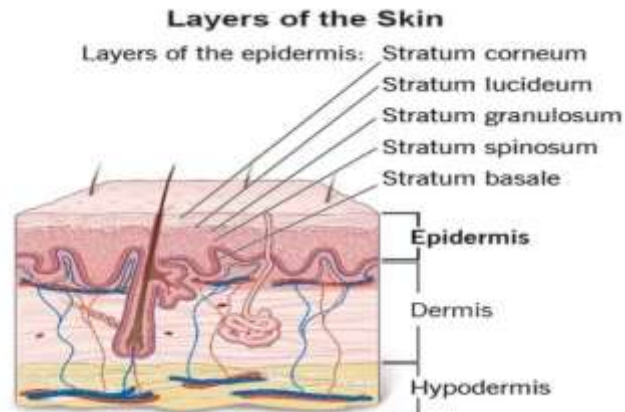
1. Introduction:

i) Introduction to Skin:

Skin is largest organ. It protect our body against germs. The skin also known as cutaneous membrane which is protect the body external surface. Skin has a surface area ranging from 1.2 to 2.2 meters sq. skin has two types first is hair bearing skin which has cover too much hair on body and second is hairless skin eg. Palms of hands and soles of feet's. It also regulates body temperature and enable touch sensation like hot and cold. Along with our hair, nails, oil glands and sweat glands is a part of integumentary (outer covering of body) system. The skin is the exposed area of our body to the pollution, sun, virus and various fungal agent while this providing some protection. Skin disorder are one of the most serious public health issue because they affect both people and community. Most of the skin infection caused by fungi, staphylococcus aurea and streptococcus species. Human skin, the outer covering of body constituents are first line defense protecting body against various pathogens.

Layers of Skin:

- A. Epidermis: It is the top most layer of skin that can we see and feel it touch it. In this layer new skin cells development occurs and it also contains the keratinocytes stem cells. There are 5 types of epidermis. i) Stratum Basale. ii) Stratum Spinosum. iii) Stratum Granulosum. iv) Stratum lucidum. v) Stratum Corneum.
- B. Dermis: It is connective tissue layer sandwiched between the epidermis and subcutaneous tissue. The role of dermis is to supply and protect the skin and deeper layer assist in thermoregulation and aid in sensation.
- C. Hypodermis: It is known as subcutaneous tissue which is innermost tissue. The hypodermis protect your skeletal system, organ, muscle and tissue from harm.



ii) Introduction to Fungus and fungal Infections:

We generally know the fungal infections are mainly occurring which is very dreadful, dangerous infection it can spread all over body by itching is an uncomfortable sensation on skin.

What is fungus ?

Fungi grows as a yeast, molds or a combination of both. They can reproduce through very tiny spore. These spores can exist in soil or airborne. Naturally occurring fungi like candida yeast in our body. Fungi live on our skin.

Who is at risk for fungal infections ?

Any person can get affected by fungal infections. Most fungi are easily treatable and they do not have any harmful effects mostly. People who have damage immune system are more likely to develop serious fungal infections. The infection are called as opportunistic infections. It can be life threatening for people who have AIDS, Autoimmune diseases like lupus, cancer, organ transplant, stem cells (bone marrow)



Anti-fungals:

Anti-fungal are the drugs which treat fungal infections. Fungus in a soil, air and skin can cause yeast infections, ringworm, nail and skin.

Fungal Infection can affect the:

- Circulatory System
- Respiratory System
- Skin and Nails

Anti-fungal medicines: It include Soap, Cream, Ointment, Gels, Powder and Oral medicine which treat fungal infections. Conventional antifungal medication include ketoconazole and miconazole.

Most Common Skin Disease:

- Eczema
- Acne
- Rashes
- Psoriasis

- Allergies
- Ringworm etc.

iii) Introduction to Soap:

Soap is a salt of a fatty acid used in a variety of cleansing and lubricating products. It is made by mixing of fats and oils with base of soap by combining chemical compound in a mixers. In a domestic, soap are surfactant usually used for washing, bathing and other type of housekeeping. The earliest recorded evidence of the product of soap like material dates back to around 2800 BC in ancient Babylon. Soap is produce by saponification or basic hydrolysis reactions of fact or oil. Soaps are generally penetrating the dry skin made of rare herbs and 100% ingredients herbal soaps are found to be highly beneficial for skin. Soap also contains glycerin, which helps the moisture in skin. In this herbal soap containing Geranium, Neem, Turmeric as natural plant ingredients and gives Anti-bacterial, Anti-fungal, Anti-inflammatory action. In this soap Geranium is a main compound. Herbal soap do not contain the artificial color, flavor, fluoride etc. When compare to the commercial soap.

Type of Soap Preparation:

- A. Melt and pour method.
- B. Cold process soap.
- C. Hot process soap.
- D. Rebatching soap.

Hydrolysis Reaction:

Fats or Oils + NaOH gives Glycerol + Sodium Salt of Fatty Acid.

2. Aim and Objectives:

Aim:

Formulation And Evaluation Of Anti-fungal Geranium Soap.

Objectives:

1. Some chemical marketed preparation are causes irritation, allergic reaction or some side effects, hence to overcome that problems this preparation is useful.
2. To find out antifungal properties of the formulation.
3. It can be used as a natural ingredients based soap.

3. Plan of Work:

Selection of Topic



Literature Survey



Selection of material



Collection of Material

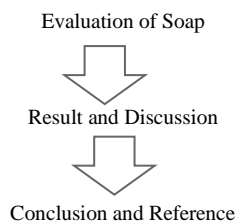


Extraction of Material



Preparation of Soap





4. Literature Review:

1. **Bochare Vaishnavi K1, Shelke Dipali S2, Belhekar Archana B3, Bodake Ravina S4, Vidhate Prajwal G5** *International Journal of Advanced Research in Science, Communication and Technology (IJAR SCT) Volume 2, Issue 2, July 2022* Abstract: Skin disorders are most serious public health issues because they affect both peoples and communities. Fungi grows as a yeasts, molds or a combination of both. Antifungal medicines treat fungal infections.

2. **Ashlesha Ghanwat, Sachin Wayzod and Vanjire Divya** Mahalaxmi Institute of Pharmacy, Raigaon, Satara, 415020, M.S., India *Research Article Current Trends in Pharmacy and Pharmaceutical Chemistry 2(2), 2020, 21-26* <http://e-currentscience.com/journal/e/CTPPC> ABSTRACT A herbal soap and hand sanitizer was formulated using the leaf and bark extract of *Azadirachta indica*, *Ocimum tenuiflorum*, *Sapindus mukorossi* and *Acacia concinna* powder.

3. **GANA MANJUSHA K, BALAKRISHNAIAH P, SYAMALA R, MOUNIK N, RAVI CHANDRA** Department of Pharmacognosy and Phytochemistry, Vignan Institute of Pharmaceutical Technology, Visakhapatnam, Andhra Pradesh, India. Email: manjusha.kondepudi.g@gmail.com Received: 31 July 2019, Revised and Accepted: 07 September 2019 Vol 12, Issue 11, 2019 *ASIAN JOURNAL OF PHARMACEUTICAL AND CLINICAL RESEARCH* ABSTRACT Objectives: The ultimate aim of this study is to formulate and evaluate the herbal bath soap using methanolic extracts of three plants having ethnic and dermatological importance in Ayurveda, namely, *Hemidesmus indicus*, *Cyperus rotundus*.

4. **Patel Anu, Patel Anar, Patel Jahanvi and Bhavsar Hemal** Assistant Professor, Sai Institute of Pharmacy, Opp. Science City, Ahmedabad-380060, Gujarat, India ISSN: 2279-0543 *IJSRR*, 11(2) April – June, 2022 *Research Article*. ABSTRACT The aim of our study to develop the herbal hygienic soap by using cold process method and having antimicrobial agent. Herbal soap was prepared using coconut oil, castor oil, neem oil, lavender oil, rose oil, and NaOH (lye) and different extracts were included into basic saponification reaction.

5. **Author(s): Rutuja R. Shah, Rohan R. Vakhariya** Email(s): shaha.rutu@gmail.com. Published In: Volume - 10, Issue - 1, Year - 2020 DOI: 10.5958/2231-5691.2020.00003.9 *Asian Journal Of Pharmaceutical Research*. ABSTRACT: Antifungal soap is type of soap that may help people get rid of various fungal infections. This type of soap is typically effective against athlete's foot and jock itch.

6. **Vasanthan. Senthil Kumar, Gokulan P.D, G. Priyadharshini, R. Praveen Kumar, N. Praveen. Kumar** Volume:04/Issue:11/November-2022 Impact Factor- 6.752 DOI : <https://www.doi.org/10.56726/IRJMETS31815> *International Research Journal of Modernization in Engineering Technology and Science*. Herbal cosmetics are very significance because of their good activity and without side effect. *Acalypha indica* (Kuppaimeni.[1]). It is an antifungal plant which plays an important role in treating skin problems caused by fungi like, *staphylococcus aureus* and *streptococcus* species. And also treat infections like Psoriasis and Eczema.

5. Material and Methods:

Contains Used in Anti-fungal treatment:

Sr. No.	Herbal Plants	Source
1.	Geranium	Plant leaves (Rahuri Krishi Vidhyapith)
2.	Neem	Plant leaves
3.	Turmeric	Rizhomes
4.	Coconut Oil	Plant fruits
5.	Castor Oil	Plant seeds
6.	Olive Oil	Plant seeds
7.	Plam Oil	Plant fruits

Sr. No.	Chemicals
1.	Glycerin
2.	Steric Acid
3.	Sodium Laurly Suplhate

1. Geranium (*Pelargonium Graveolens*):

Synonym: Stroksbills, Cranebills.

Biological Source: *P. graveolens* is a pelargonium species native to the cape provinces and the northern province of South Africa. Zimbabwe and Mozambique in the family Geraniaceae.

Family: Geraniaceae.

Part Used: Leaves.

Active Constituents: The main active constituents of *P. graveolens* are citonellol (33.3%), geraniol (26.8%), linalool (10.5%), citronellyl formate (9.7%), p-menthol (6.0%)

Activities: Anti-fungal, Anti-bacterial, Anti-oxidants, Anti-inflammatory, acts as cleansing, toning agents, helps to treat eczema and acne, used to fragrance, flavors, it widely used for scenting soaps due to its stability in alkaline medium.



2. Neem (*Azadirachta Indica*):

Synonym: Margosa, Nim Tree, Nimba, Melisav.

Biological Source: Neem consist of almost all part of plants of *Azadirachta Indica* species to the Indian subcontinent and to dry are as throughout South Asia belongs to family Meliaceae.

Family: Meliaceae.

Part Used: Leaves.

Active Constituents: Azadirachin and other are nimbolinin, nimbin, nimbidin, salonin.

Activities: Anti-fungal, Anti-bacterial, Anti-microbial, Anti-inflammatory, Anti-oxidants.



3. Tumeric (*Curcuma Longa*):

Synonym: Haldi, Haridra, Manjal, Curcumin.

Biological Source: It is obtained from dried rhizome of *curcuma longa* native to tropical South Asia belongs to family Zingiberaceae.

Family: Zingiberaceae.

Part Used: dried Rhizome

Active Constituents: Curcuminoids (1-6%), demethoxycurcimine, bisdemethoxycurcumin, polyphenolic compound (3-6%).

Activities: Anti-fungal, Anti-microbial, Anti-inflammatory.



4. Coconut oil: (*Cocos Nucifera*):

Synonym: Copra oil.

Biological Source: It is edible oil obtained from fruit or seed of the coconut palm tree *cocos nucifera* belongs to family Arecaceae.

Family: Arecaceae.

Part Used: fruits/seed

Active constituents: Saturated fats (99%), lauric acid (41.8%), myristic aci (16.7%), palmitic acid (8.6%), caprylic acid (6.8%), monounsaturated fats (6%), polyunsaturated fat (2%).

Activities: Skin Moisturizer and Softener, reduce redness rehydrated skin, treating for eczema, psoriasis and other skin infections.



5. Castor oil: (*Ricinus Communis*)

Synonym: Ricinus

Biological Source: It is obtained from the castor seeds of *Ricinus communis* native in Southeastern Mediterranean Basin, Eastern Africa and India belongs to family Euphorbiaceae.

Family: Euphorbiaceae.

Part Used: seed

Active Constituents: Ricinoleic acid, oleic acid, palmitic acid, stearic acid, linolic acid, dihydroxusteric acid.

Activities: Helps to fighting skin bacteria that prevent acne and rough skin, easy to penetrate skin, soothing effect, moisturizer, emollient, it is potent skin cleanser.



6. Olive oil (*Olea Europaea*):

Synonym: Fossil Oil, Lubricating Oil.

Biological Source: It is a fixed oil extracted from the fruits of *Olea Europaea* mainly grows in Mediterranean basin and Spain, Italy, Greece are largest producers also belongs to family Oleaceae.

Family: Oleaceae.

Part Used: Fruits.

Active Constituents: Oleic acid (83%), linoleic acid (21%), palmitic acid (20%), myristic acid, heptadecanoic acid, eicodanoic acid, triolein.

Activities: Anti-oxidant, Anti-inflammatory, good skin conditioner and moisturizer, to treat skin infections such as dermatitis, eczema, psoriasis, aging etc.



7. Palm oil: (*Elaeis Guineensis*)

Synonym: palmate

Biological Source: It is a edible vegetables oil that comes from the fruits of palm tree of *Elaeis Guineensis* mainly native to the West, Africa, Asia, America, Indonesia, Malaysia, belongs to family Palmaceae.

Family: Palmaceae.

Part Used: Fruits.

Active Constituents: Palmitic acid, oleic acid, linoleic acid, palmitoleic acid , steric acid.

Activities: Cleansing agent, hardening agents, primarily used for cooking, in detergent, in cosmetics.



8. Glycerin Soap Base: (Moisturizing Agents)

It enhance with moisturizing and nourishing quality of glycerin. It acts as a skin moisture and soothing agent for dry skin. It can made with pure glycerin. It is a great emollient which is used in soap and highly effective for soothing the skin and reducing inflammation and itching.



9. Steric acid: (Hardening Agent)

Hardening agents is the agents which gives proper shape to the formulation and chemical agents used to increase strength and hardness of formulation are called hardening agents. In this formulation of Geranium antifungal soap steric acid is used as hardening agents.



10. Sodium Lauryl sulphate: (Surfactant)

Surfactant in soap helps to reduce water surface tension and allow oil to easily wash out. In this formulation SLS i.e. Sodium Lauryl Sulphate is used as a surfactant.



- **Humectants:** Humectants are substance that attract water from air or from deeper in a skin. In formulation of soap glycerin and propylene glycol is used as humectants.
- **Lye:** A lye is a metal hydroxide mainly obtained by leaching ashes. It is a strong alkali which is highly soluble in water producing caustic basic solution "Lye" is commonly an another name of sodium hydroxide (NaOH) in formulation of Soap.
- **Coloring Agents:** Coloring agents is used for giving color to the formulation. In this formulation own Geranium Oil, Neem Oil and turmeric is used as Antifungal, antibacterial, antiinflammatory as well as coloring agent to give color to the soap.

Marketed Formulations :

Table1: Marketed Formulations

Sr. No.	Brand Name	Company Name	Used for
1.	Ketopz	Mark (India) pharma	Skin infection
2.	Zilzip	Medibyte pcd Franchise Company	skin infection
3.	Iptozol	Medibyte pcd Franchise Company	Athletic's foot, Ringworm
4.	Luliris	Medibyte pcd Franchise Company	Tinea cruris, Tinea corporis
5.	Ketoraz	Medibyte pcd Franchise Company	Red and itchy rash, infection of tooes
6.	Aactaril	Himalaya Wellness	Skin infection

Advantages:

- Antifungal soap boost overall health of patient.
- This are tough on germs and gentle to skin.
- This soap kills the germ and remove bad odor.
- It also reduce itching on skin.
- It is easy to production and easy to apply skin.
- It is effective.

Ideal Properties of Geranium Oil Formuated an Antifungal Soap:

- It having property of antifungal which reduce the growth of fungus.
- It also having property of antiseptic and antibacterial.
- It is the essential oil wide used in food, flavor, fragrance and cosmetics.
- It is best skin care oil because it is good opening spores.

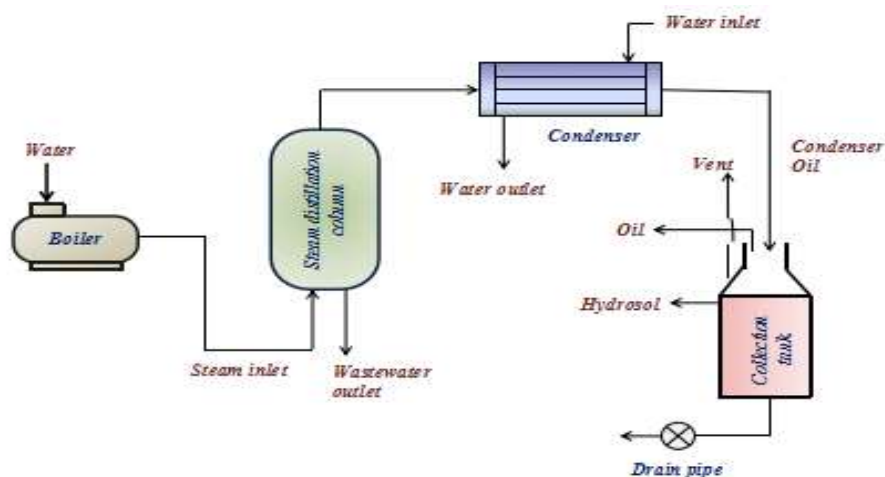
- Ability to lower stress and reduce swelling and boost immunity.

6. Methods of preparation:

1. Preparation of essential oils:

Geranium:

Steam Distillation: Steam distillation is best process which gives better quality of oil. It is the most popular method used to extract and isolate essential oils from plants. This method used for purifying liquid which decompose at their normal boiling point. The steam vaporizes the plants material volatile compound which go through condensation and collection process. It is used for separating organic compounds from plants elements.



General Procedure For Steam Distillation: The leaves from plants material was cut and grind into small pieces with a juice blender. The sample was placed inside a round bottomed flask which connected with the distillation apparatus. 200ml water was added inside the round bottomed flask to generate steam. The sample was heated to 200 degree Celsius and distilled for 6 hours. The oil containing distillate was then collected and dried over anhydrous magnesium sulphate with further separation by centrifuging at 1300 rpm for 30 minutes. The essential oils was then transferred into Amber glass vial for further analysis.

Neem:

Soxhlet Extraction Method: 100gm of Neem leaves was placed into the thimble and placed in soxhlet chamber. 500ml of water as a solvent were placed in round bottom flask and assembled for soxhlet extraction then the distillation process was begun. After completed the extraction process the solvent extraction were placed on water bath to evaporate the solvent. Then extracted neem oil was weighed by using the following equation,

$$\% \text{ oil yield} = \frac{W1 - W2}{w1} \times 100$$

Where, W1 = Sample weight initially placed in thimble.

W2 = Sample weight after dried in the oven.

2. Procedure of Geranium Antifungal Soap:

- Firstly, accurately weight all ingredients, oils properly.
- Take breaker on water bath add in beaker glycerin soap base and stir it.
- Then prepare the soap base with glycerin and add Coconut Oil, Olive Oil, Castor Oil, Palm Oil, accurately according to their weights.
- Add 1gm of Turmeric, 1gm of Steric acid and 1gm of Sodium Laurly Sulphate in soap base.
- After the mixtures mixed properly then add Neem Oil and Geranium Oil.
- After that pour it into soap mold and tap them to set down.
- Then keep in refrigerator, for about 2-4hrs.
- Prepared soap was packed into suitable container box, labeled and used for further studies.

3. Prepare Anti-fungal Soap:

The antifungal Geranium Soap was prepared by using appropriate procedure. This soap helps to prevent our body against fungal infections.

7. Discussion and Evaluation Test For Anti-fungal Geranium Soap:

Physical Characteristics:

Clarity, Color and Shape was checked in naked eyes against white background, the odor was smelled.

Evaluations:

The Geranium soap was evaluated for following characteristics

1. Organoleptic Evaluation:

i) Color:

ii) Odour:

iii) Appearance: Good

iv) Shape:

2. pH:

The pH of all prepared formulation was determined by using digital pH meter. The formulation were dissolved in 100ml of distilled water and stored for 2 hours. The measurement of pH of formulation was done in previously calibrated pH meter.

3. Determination of % Free Alkali:

About 5gm of sample was take in conical flask and added to it into 50ml of neutralized alcohol. It was boiled under reflux on water bath for 30min. Cooled and 1ml of phenolphthalein indicator was added it was the titrated immediately with 0.1NaoH.

4. Foam Retention:

25ml of the soap solution was taken in to a 100ml graduated measuring cylinder. The cylinder was covered with hands and shaken 10 times. The value of foam at 1min intervals for 4 min was recorded.

5. Foam Height:

0.5gm of sample of soap was taken. 25ml distilled water, then transferred it into 100ml measuring cylinder, volume was make up to 50ml with water. 25 strokes were given and stand till aqueous volume measure up to 50ml and measure the foam height above aqueous volume.

6. Alcohol Insoluble matter:

5gm of sample was taken in conical flask added it to 5ml of warm ethanol and shake vigorously to dissolve the solution was filtered through a filter paper with 20ml warm ethanol and dried it at 105 degree Celsius for 1 hours. The weight of dried paper was taken,

Formula: % alcohol insoluble matter = weight of residue / weight of sample × 100

7. Irritation:

It is carried out by applying soap on skin for 10 min. If no irritation then it is consider as non-irritant product.

8. Saponification Value:

Saponification Value Can be defined as no. of potassium hydroxide which is required to saponify fat/oil of 1g. Weighed about 2g of oil in a conical flask. Added 0.5 M of potassium hydroxide to the above oil and heated it for 55 degrees with continuous stirring on a water bath. Temperature was increased into 100 degrees and boiled for about 1 hr. Performed titration using phenolphthalein as an indicator and excess of potassium hydroxide was measured. Readings were noted down saponification value is calculated by:

Saponification value = Avg. Vol. Of KOH * 28.056 wt. Of Oil (g)

9. Antifungal Activity Studies:

Determination of Minimum Inhibitory Concentration (MIC) of the oil andthe aromatic constituents: This was determined following the tube dilution method reported earlier. Different volumes of oil where mixed with sterile, cooled molten SDA supplemented with 0.75% (w/v) of sodium taurocholate to give a concentration of 1.95-1000 by two fold serial dilution method. The statistical analysis of the MIC values from three experiments was carried out by students t-test.

8. Summary And Conclusion:

In this study, it was concluded that the Antifungal Geranium Soap was formulated successfully. The drugs has been found to be very effective and cheaper. Its very challenging for searching of new. Natural antifungal source without negative impact on the environment. The prepared formulation when tested for different test gave good results and does not have any irritating to the skin. The biological properties obtained by Pelargonium essential oil in this study use numerous health problems and medical conditions. However furthermore studies must be performed to confirm the safety of antifungal soap of geranium on prevention of fungal infections.

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