

A Brief Review on Herbal Hair Shampoo

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Abstract—The objective is to prepare and evaluate herbal shampoo and determine physiochemical function that stand the parameter of safety, efficacy, and quality.

Herbal shampoo is a natural hair care product use to remove dandruff, dirt and clean the scalp, promoting hair growth, strengthens the hairs.

Various chemical shampoo produce certain kind of side effects. So, the main objective of preparing herbal shampoo that, it is free from any kind of side effects.

The aim is to prepare and evaluate anti dandruff and hair growth promoting shampoo with all natural ingredients.

The study aimed to formulate and evaluate the herbal shampoo using plant material (Hibiscus, shikakai, ritha, Alma, aloe Vera, lemon).

The herbal decoction is prepared from the following ingredients and incorporated into surfactant base with natural thickener and preservatives.

The formulation claims that it is non -irritant, has cleansing properties and has reasonable physical stability.

The evaluation of herbal shampoo includes organoleptic test, pH, viscosity, foaming stability, surface tension, dirt dispersion etc.

Index Terms—Herbal shampoo; Cleanser; Hair Care ; Hair Detergent; Ayurvedic Herbal Shampoo; Hair conditioning; Hair cleanser.

I. INTRODUCTION

Shampoos are most probably used as cosmetics. It is a hair care product that is used for cleaning scalp and hair in our daily life Shampoos are most likely utilized as beautifying agents and are a viscous solution of detergents containing suitable additives, preservatives and active ingredients” It is usually applied on wet hair, massaging into the hair, and cleansed by rinsing with water. The purpose of using shampoo is to remove dirt that is build up on the hair without stripping out much of the sebum. Many

synthetic shampoos are present in the current market both medicated and non-medicated; however, herbal shampoo popularized due to natural origin which is safer, increases consumer demand and free from side effects

[1-3]

Shampoos are probably the most widely used cosmetic products for cleansing hairs and scalp in our daily life. [4] A shampoo is basically a solution of a detergent containing suitable additives for other benefits such as hair-conditioning enhancement, lubrication, medication etc. [5]

There are many different types of shampoos available today, including synthetic, herbal, medicated, and non-medicated varieties, but consumers are becoming more and more interested in herbal shampoo because they think that because these products come from natural sources, they are risk-free and without side effects".[6]

Herbal medicine is the study of pharmacognosy and the application of medicinal herbs as a foundation for traditional medicine. Chemical formulations made up of many compounds that can heal hair problems but also cause hair damage. According to certain worldwide study, the ingredients in herbal shampoo cause cancer. Surfactants (synthetic) are added to synthetic shampoos for their cleansing and foaming properties, but long-term use causes major side effects such as eye irritation, scalp irritation, hair loss, and hair dryness. Shampoos containing natural herbs can be used as an alternative to synthetic shampoo [7] The most popular products for cleaning our hair and scalp on a daily basis are likely herbal shampoos. Herbal shampoos are cosmetic products made with traditional Ayurveda herbs that are intended to clean the hair and scalp in the same way as ordinary shampoo.[8] Most likely to be shampoos are utilized as cosmetics.

They are employed to remove oils, dandruff, Environmental pollutants, and other impurities. Herbal shampoos aim at providing essential nutrients

to the hair and at the same time have a slight cleansing action to remove the hair's excess oil content [9]

II. HISTORY

Hans Schwarzkopf created the original liquid shampoo in 1927, which was still referred to as "soap." Liquid has been the most widely used form factor for hair cleaning since 1927. Hans Schwarzkopf did not develop a soap-free liquid until 1933.

In the Indian subcontinent, a range of herbs and their extracts have been used as shampoos considering historic times. A very high-quality early shampoo used to be made with the aid of boiling Sapindas with dried Indian gooseberry (amla) and a resolution of different herbs, the use of the strained extract. Additionally recognized as soapberries or soapsuds, a tropical tree widespread in India, is known as ksuna [9]. In historical Indian texts and its fruit pulp consists of saponins which are an herbal surfactant. Cleansing with hair and physique rubdown (campus) all through one's every day tub was an indulgence of early colonial merchants in India. When they lower back to Europe, they brought the newly realized habits, which includes the hair treatment they known as shampoo.

Herbal shampoos have been around for a long time, with ancient civilizations using plant extracts and oils to clean and beautify hair. People in places like Egypt and Greece used ingredients like olive oil, rosemary, and lavender to make their own shampoos. In India and China, traditional medicine systems like Ayurveda and Traditional Chinese Medicine have long used herbs for hair care. In more recent times, as people became more aware of the potential harm from chemicals in regular shampoos, the demand for herbal shampoos grew. Nowadays, you can find herbal shampoos everywhere, offering natural options for different hair types and needs. So, the history of herbal shampoos shows a tradition of using plants for healthy, beautiful hair, which continues today as we look for natural and sustainable ways to care for ourselves.

III. TYPES OF SHAMPOO



POWDER SHAMPOO



GEL SHAMPOO



OIL-BASED SHAMPOO



SOLID SHAMPOO



CREAM SHAMPOO

IV. IDEAL PROPERTIES

- It should fully and efficiently clean the hair of any dust or filth, excessive sebum or other fatty material, and loose corneal cells.
- It ought to be simple to remove with rinse water.
- It shouldn't cause any negative effects like eye or skin discomfort
- It should provide a pleasant aroma to the hair.
- To give the hair a lustrous, smooth finish.
- Make a significant volume of foam.
- The hand shouldn't get dry and chapped as a result. It ought to successfully and totally eliminate dirt.[10]

V. BENEFITS OF SHAMPOO

- ❖ Natural and Gentle:
 1. Sulphate-free: Herbal shampoos are free from harsh sulphates, which can strip the hair of its natural oils
 2. Gentle cleansing: Herbal shampoos clean the hair and scalp without stripping them of their natural moisture.
- ❖ Promotes Healthy Hair and Scalp:
 1. Nourishes the scalp: Herbal shampoos can help to nourish and soothe the scalp, reducing irritation and inflammation.
 2. Strengthens hair roots: Herbal shampoos can help to strengthen hair roots, reducing hair fall and promoting healthy hair growth.
 3. Improves hair texture: Herbal shampoos can help to improve the texture of the hair, making it soft, smooth, and manageable.

- ❖ Environmentally Friendly:

- 1 Biodegradable: Herbal shampoos are biodegradable and free from harsh chemicals that can harm the environment.
- 2.Cruelty-free: Herbal shampoos are often cruelty-free and vegan-friendly, making them a great choice for those who care about animal welfare.

- ❖ Customizable:

1. Tailored to hair type: Herbal shampoos can be tailored to specific hair types, such as dry, oily, or combination hair.
2. Address specific hair concerns: Herbal shampoos can be formulated to address specific hair concerns, such as dandruff, itchiness, or hair loss.

- ❖ Cost-Effective:

1. Long-term benefits: Herbal shampoos may be more expensive than conventional shampoos, but they offer long-term benefits for the hair and scalp.
2. Reduced need for styling products: Herbal shampoos can help to improve the health and appearance of the hair, reducing the need for styling products.[11]

VI. ADVANTAGES

1. Pure and organic ingredients are used.
2. These shampoos are free from side effects.
3. No synthetic additives such as sodium lauryl sulphate.
4. No animal testing.
5. Skin friendly.
6. These shampoos help in the strengthening the root which in turn helps in increasing the growth of hair. herbal shampoos also help in increasing the shine of hair therefore for one who suffers from dry and dull hair these herbal shampoos are beneficial.
7. It enhances the roots and helps in the formation of new root which are soft then before.
8. Herbal shampoos help in reducing the dandruff production in the scalp.
9. They may be beneficial in reduction of hair fall [12]

VII. DISADVANTAGES

1. Some herbs are sensitive to scalp. example: menthol.
2. Natural products affect product uniformity and quality control.
3. Seasonal variation of plant constituents occurs.
4. Less stable so, preservative should be added.
5. Varying in consistency from batch to batch.
6. Dry shampoo doesn't clean hair.
7. Skin allergies may be occurred.[12]

VIII. CLASSIFICATION OF SHAMPOO

- ❖ Based on Appearance. Powder shampoo
Liquid shampoo or lotion shampoo Gel shampoo or Solid shampoo Cream shampoo
Oil shampoo
Miscellaneous anti dandruff shampoo or medicated shampoo
- ❖ Based on Use or Function. Conditioning shampoo Antidandruff shampoo Therapeutic shampoo
Baby shampoo Balancing shampoo Clarifying shampoo

❖ Based on origin: Herbal shampoo Egg shampoo

❖ Problems Related to Hair: Dandruff
Dry hair Split ends Oily hair Hair loss
Color damage [13-18]

IX. ANATOMY OF HAIR

The hair is made up of 95% keratin a fibrous, helicoidal protein (shaped like a helix) that forms part of the skin and all its attachments (body hair, nails etc.).

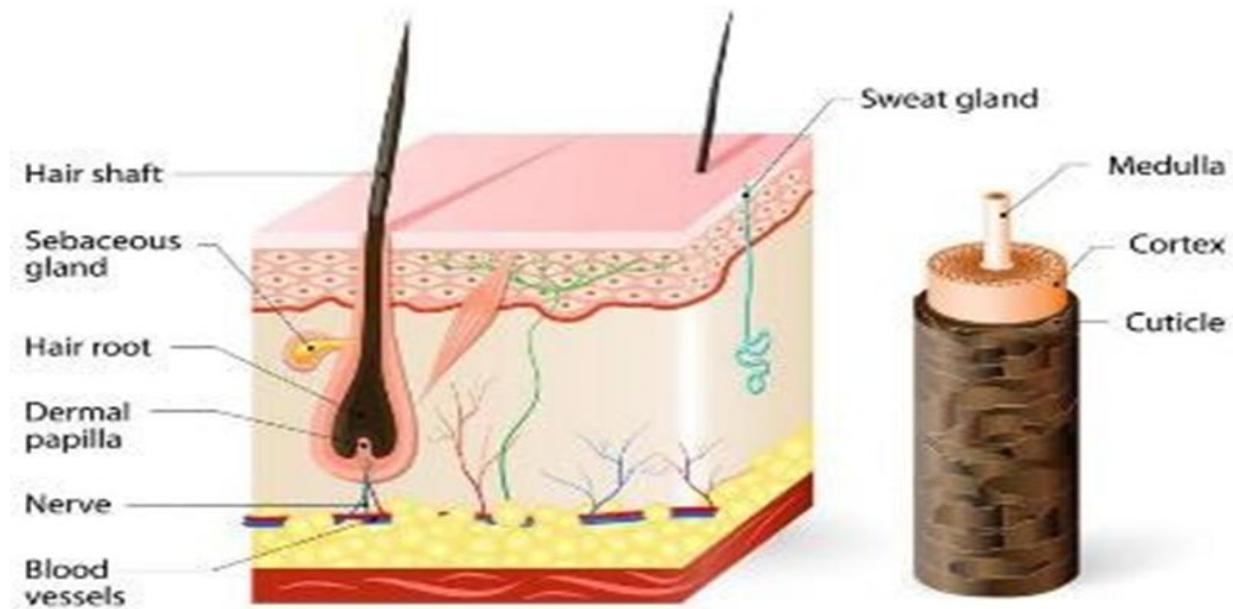
The hair structure consists of 3 different parts:

Medulla: It is the innermost layer of the hair shaft, made up of an amorphous, soft and oily substance.

Cuticle: Thin protective outer layer that contains nutrients beneficial for hair growth. It is high keratinized with cells shaped like scales.

Cortex: It is the main constituent of the hair, containing long keratin chain which gives elasticity suppleness and resistance to the hair. The cells of the cortex are joined together by an intercellular cement rich in lipids and proteins.

HAIR ANATOMY



X. PHYSIOLOGY OF HAIR

Hair growth cycle: Hair development a continuous cyclic process and all mature follicles go through a growth cycle consisting of growth (anagen), regression (catagen), rest (telogen) and shedding (exogen) phases. The duration of the phase's changes based on the location of the anagen hair and also personal nutritional and hormonal status.

1. Anagen: is the active growth phase in which the follicle enlarges and takes the original shape and the hair fiber is produced. Almost hair cm² on average with variable range of 175-300 hair cm². The rate of hair growth has been reported be varying with sites. Scalp and chin have highest rate of growth. The rate of growth of scalp hair is between 0.27-0.40 mm per day Also, there is one study report which indicated that the growth of scalp hair in women is faster than men. The growth rate of scalp hair is more in young and adults and declines in old age"

The featured regulatory proteins in anagen phases are BMP, sonic hedgehog, several WNT proteins and receptors, Insulin like growth factor-1 (IGF-1), fibroblast growth factor-7 hepatic growth factor (HGF), and vascular endothelial growth factor (VEGF) are thought to be important for anagen maintenance.[19]

2. Catagen: "At the end of anagen, mitotic activity of the matrix cells is diminished. The follicle enters a highly controlled evolutionary phase known as cartage. During catagen the proximal of the hair shaft is keratinized and forms the club hair, Whereas the distal part of the follicle is involuted by apoptosis"

Catagen phase is consisted of eight different stages. The first sign of catagen is the termination of melanogenesis in the hair bulb. Follicular epithelium, mesenchyme, neuroectodermal cells populations and also perifollicular vascular and neural systems demonstrates cyclic changes in differentiation and

apoptosis. However, any apoptosis is occurred in dermal papilla due to the expression of suppressor bcl-2.[20]

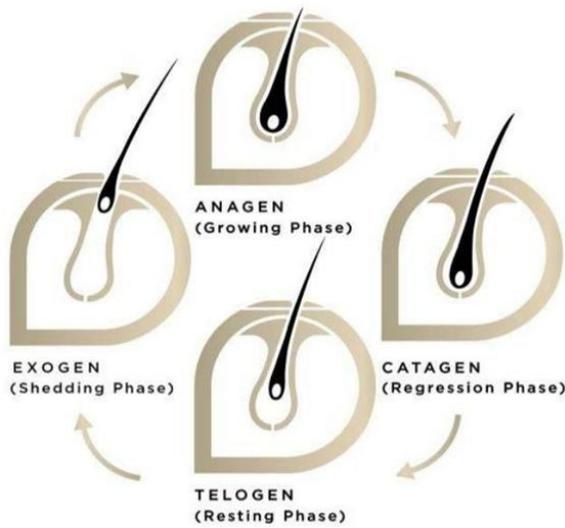
3. Telogen: "The telogen stage is defined as the duration between the completion of Follicular regression and the onset of the next anagen phase. Telogen stage lasts for 2-3 months. Approximately 10-15% of all hair is in telogen stage. During theTelogen stage, the hair shaft is transformed to club hair and finally shed. The follicle remains in this stage until the hair germ which is responsive to anagen initiating signals from the dermal papilla, starts to show enhanced proliferative and transcriptional activity in late telogen, leading to the initiation of anagen.

Telogen is one of the main targets of hair cycle which is influenced by several modulator agents like androgens, prolactin, ACTH, retinoids and thyroid hormones.

Germ cells of telogen follicles also express bicuculine and FGF-5. The bone morphogenicprotein-4 (BMP-4) as a growth factor plays an essential role in suppressing follicular growth and differentiation at telogen stage.[21]

4. Exogen: "There is less interest for the mechanism of the hair shedding but from the patient's perspective it is probably the most important part of the hair growth. It is not unusual for human telogen hairs to be retained from more than one follicular cycle and this suggests that anagen and exogen phases are independent. The shedding period is believed to be an active process and independent of telogen and anagen thus this distinct shedding phase is named exogen. All body hairs undergo a similar life cycle, although is extent, the duration of its phases and the length of individual shafts vary between different body areas and between individuals, depending on genetic programming, gene, age and health status.[22]

HAIR GROWTH CYCLE



XI. HAIR PROBLEM

Hair problems encompass a wide range of conditions that affect the scalp and hair strands, often necessitating specialized care and treatment:

1. Dandruff: A common issue characterized by flaking of the scalp, caused by various factors such as dry skin, yeast overgrowth, or sensitivity to hair care products. Herbal shampoos with antifungal or

soothing ingredients like tea tree oil or aloe vera can help alleviate dandruff.

2. Hair Loss: Hair loss or alopecia can result from genetics, hormonal changes, stress, or medical conditions. Herbal shampoos targeting hair loss often contain ingredients like saw palmetto or biotin, aiming to strengthen hair follicles and minimize hair fall.

3. Dryness and Frizz: Dry, frizzy hair occurs due to a lack of moisture and damage to the hair cuticle. Herbal shampoos with hydrating components like coconut oil or shea butter can restore moisture and smoothen the hair shaft.

4. Oily Scalp: Excessive oil production on the scalp leads to greasy, flat-looking hair. Herbal shampoos formulated with clarifying ingredients like citrus extracts or witch hazel can regulate oil production without stripping the scalp of its natural oils.

5. Scalp Irritation: Conditions like scalp psoriasis, eczema, or sensitivity to certain ingredients in hair products can cause itching, redness, or inflammation. Herbal shampoos with gentle, calming ingredients like chamomile or calendula aim to soothe and alleviate scalp irritation.



XII. PLANT PROFILE

1. JASVAND:



Common name	Hibiscus
Biological name	Rosa - Sinesis L.
Kingdom	Plantae
Class	Magnoliopsida
Order	Malvales
Family	Malvaceae

Uses:

- Hibiscus may help lower blood pressure and cholesterol level by relaxing blood vessels.
- Rich in antioxidants like vitamin C and polyphenols which help fight inflammation.
- It can improve lever health.
- It possess antibacterial properties that can help fight infection.
- It also promotes hair growth.
- It uses to reduce hair fall.

Category: Conditioner

2. AMLA:



Common name	Indian gooseberry
Biological name	Phyllanthus Emblica
Kingdom	Plantae
Class	Magnoliopsida
Order	Malpighiales
Family	Phyllanthaceae

Uses:

- Amla is an important crop in Ayurveda.
- It is a richest source of vit C.
- It acts as diuretic, laxative, antibiotic.
- It acts as good liver tonic.
- It has depressant action on central nervous system.
- It reduces hair fall.
- It treats anemia .
- It also used as blood purifier.
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Category: Growth promoter

3. SHIKAKAI:



Common name	Shikhakai, Soap pod
Biological name	Acacia concinna
Kingdom	Plantae
Class	Magnoliopsida
Order	Fabales
Family	Mimosocea

Uses:

- It is used to treat constipation and skin problems.
- Leaves and pods are used to treat cuts, wounds, and oral diseases.
- It acts as purgative.
- Use to treat abdominal pain.
- It also acts as hair cleanser.
- Also strengthen the hair roots and promote hair growth.

Category: Anti-fungal.

5. BHRINGRAJ:



Common name	Bhagra, bhringraj
Biological name	Eclipta Prostrata (alba)
Kingdom	Plantae
Class	Magnoliopsida
Order	Asterales
Family	Asteraceae

Uses:

- It promotes hair growth.
- Treat skin infection.
- It also detoxifies liver.
- It treats liver disorder.
- Also supports digestion.

Category: Hair growth

6. NEEM:



Common name	Neem, Nimba
Biological name	Azadirachta Indica
Kingdom	Plantae
Class	Dicotyledonae
Order	Sapindales
Family	Maliaceae

Uses:

- Beneficial in treating acne.
- Used to treat dandruff, and scalp infection.
- Neem can promote healthy digestion, bloating, and constipation.
- It has detoxifying properties.
- Bioactive compound in neem can help to reduce pain and inflammation.

Category: Anti- dandruff .

6. RITHA:



Common name	Indian soapberry
Biological name	Sapindus mukorossi
Kingdom	Plantae
Class	Dicotyledons
Order	Sapindales
Family	Sapindaceae

Uses:

- Natural hair cleanser.
- Used as detergent.
- Prevents dandruff.
- Antifungal in nature.
- Prevents acne & pimples.
- Promotes hair growth.

Category: Hair nourishing, Stop hair fall.

7. METHI:



Common name	Methi
Biological name	Trigonella foenum-graecum
Kingdom	Plantae
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae

Uses:

- Helps to regulate blood sugar level due to its soluble fibers.
- Fibers in methi promote smooth digestion.
- Promotes hair growth.
- Strengthens hair roots.
- Balances hormones and alleviates menstrual

discomfort.

- Reduces inflammation.

Category: Hair

8. LEMON:



Common name	Lemon
Biological name	Citrus limon
Kingdom	Plantae
Class	Dicotyledons
Order	Rosidales
Family	Rutaceae

Uses:

- High levels of vitamin C strengthen the immune system.
- Lemon juice stimulates digestion.
- Antioxidants and flavonoids can lower blood pressure.
- Helps in detoxification process.

Category: Anti-bacterial, Anti-dandruff.

9. ALOE VERA:



Common name	Aloe vera
Biological name	Aloe barbadensis miller
Kingdom	Plantae
Class	Liliopsid
Order	Asparagales
Family	Asphodelaceae

Uses:

- Has antibacterial properties; inhibits growth of different bacteria.
- It has cooling properties, soothes and helps heal burns.
- Used in acne due to its anti-inflammatory and antibacterial properties.
- Used to boost immune system.
- Aloe vera juice can reduce plaque, improve oral hygiene, and provide relief from bleeding gums.
- Prevents premature greying of hair.
- Prevents dandruff.

Category: Smoothing

10. ROSE WATER:



Common name	Rose water
Biological name	Rosa damascene mill
Kingdom	Plantae
Class	Magnoliopsida
Order	Rosales
Family	Rosaceae

➤ Uses:

- Skin disorders

- Toner
- Skin toner
- Cleansers
- Hair care formulations
- In masks, creams, lotions

Category: Perfuming agent

11. METHYL CELLULOSE:



Uses:

- Used as a binder in tablets.
- Acts as a disintegrant.
- Used as a suspending and emulsifying agent
- Serves as a bulk-forming laxative
- Component of artificial tears and eye lubricant.

Category: Thickening agent

12. SODIUM LAURYL SULPHATE:



SLS is included in several medicinal formulations:

- Tablet disintegrant (helps tablets break apart).
- Wetting agent (improves drug dissolution).
- Topical creams and gels (improve spread ability).
- Used in some oral preparations in small amounts.

Uses:

SLS is widely used as a surfactant and foaming agent in:

- Shampoos
- Toothpastes
- Face washes
- Body washes
- Shaving creams

Category: foam/ cleansing.

13. METHYL PARABEN:



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Uses:

Used as a preservative in:

- Tablets
 - Syrups
- Methyl paraben is widely used as a preservative to prevent the growth of bacteria, molds, and fungi in:
- Creams
 - Lotions
 - Shampoos
 - Conditioners

- Face washes
- Makeup products

Category: Preservative

XIII. METHOD OF PREPARATION

Weigh all the ingredients according to the formula.

↓

Take a beaker & add then decoct the Neem, alma, aloe- Vera, bhringraj and Methi together for some time.

↓

After decoction, filter it through a muslin cloth.

↓

In another beaker add decoction of shikakai & soap nut as they are foaming agents, again filter it through muslin cloth.

↓

Mix both the solutions together.

↓

Add lemon juice to it.

↓

Add further chemicals like methyl cellulose, SLS & methyl paraben.

↓

Add rose water to make up volume.

XIV. COMPOSITION OF FORMULATED SHAMPOO

Sr.no	Ingredients	Quantity for 50MI)
1.	Hibiscus	2.5 gm
2.	Neem	2.5 gm
3.	Amla	5 gm
4.	Shikakai	7.5 gm
5.	Ritha	7.5 gm
6.	Bhringraj	7 gm
7.	Methi	5 gm
8.	Aloe Vera	2.5 ml
9.	Lemon juice	qs
10.	Rose water	qs
11.	Methyl cellulose	1.5 gm

12.	Sodium lauryl sulphate	5 gm
13.	Methyl paraben	1 gm

XV. EVALUATION TEST FOR SHAMPOO

- Appearance
- Color
- pH
- Viscosity
- Surface tension
- Dirt dispersion

XVI. CONCLUSION

The main purpose of formulation was to develop safe and effective shampoo by including all the types of additives used in shampoo. By using natural herbal shampoo, we can reduce the side effects of shampoo. Herbal shampoo is more effective than chemical / synthetic shampoo. Synthetic conditioner reduces protein or hair loss. To provide effective conditioning, the formula involves the use of shikakai, Alma, aloe Vera and other plant extract. Herbal shampoo is effective in providing smooth and shiny hair. To evaluate the good product many tests were performed. Several tests were evaluated and performed and compare the physiochemical properties of both natural and marketed shampoo. The result of evaluation study of developed shampoo received a comparable result for quality control test, but further scientific validation is needed for its overall quality.

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