



A REVIEW ON HAIR CARE POTENTIAL OF PSIDIUM GUAJAVA (GUAVA) AND ORYZA SATIVA (RICE)

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ABSTRACT:

Psidium Guajava (Guava) and Oryza Sativa (rice) are two widely cultivated plants with significant ethical values. This review examines diverse medical applications of these plants, focusing on their phytochemical components and medicinal activities. Guava is rich in flavonoids, tannins, and essential oils, which contributes to its antibacterial, antidiabetic, anti-inflammatory and antioxidant properties. Its leaves, fruits and bark are traditionally used to treat gastrointestinal disorders, wounds and infections. Rice, a major food for a large part of the global population, also has medicinal capacity in its bran and husk, which contains bioactive compounds such as γ -orizanols, tokopherol and phenolic acid. Herbal formulations are attracting widespread attention to hair care due to their safety, efficacy and minimal side effects. Psidium Guajava (Guava) and Oryza Sativa (rice) are two vegetation which are known for traditional use in promoting their rich phytochemical profiles and hair health. This review examines the hair care ability of these natural ingredients when ready in a serum.

Keywords: Psidium guajava, Oryza sativa, Antioxidant activity, Natural remedies, Medicinal plants, Phytochemicals.

INTRODUCTION

In current years, there has been a massive upward thrust in customer desire for herbal and herbal-based beauty products because of growing awareness approximately the unfavourable consequences of artificial chemical compounds on human health and the environment. Hair care, in particular, is one of the most swiftly evolving sectors of the beauty industry, with a growing call for merchandise which are both effective and secure. Among various natural formulations, natural hair serums have received popularity for his or her lightweight, non-greasy nature and capability to provide nourishment, manageability, and protection to hair without inflicting buildup or inflammation.



A herbal hair serum is a leave-on treatment designed to improve the arrival and fitness of hair by way of delivering lively botanical extracts without delay to the scalp and hair strands. These serums are usually water-based or mild oil-based and enriched with plant extracts, vitamins, and important oils that concentrate on unique hair concerns which include hair fall, frizz, dullness, and scalp dryness. In the prevailing observe, an try is made to formulate and examine a herbal hair serum containing extracts of Oryza sativa (rice) and Psidium guajava (guava) leaves—two vegetation recognised for his or her medicinal and beauty blessings, particularly in hair care.

Oryza sativa (Rice) is a staple cereal crop acknowledged for its wealthy dietary profile. Its extracts, mainly rice water, are wealthy in amino acids, nutrients (specifically B-complicated), antioxidants, and minerals that nourish the scalp, give a boost to hair roots, improve elasticity, and reduce surface friction. Traditionally, fermented rice water has been utilized in Asian cultures to promote long, strong, and vibrant hair. *Psidium guajava* (Guava) leaves are a wealthy supply of flavonoids, tannins, and vital vitamins like vitamin C and B, which show off sturdy antioxidant, anti inflammatory, and antimicrobial homes. These bioactive compounds assist reduce hair fall, sell hair boom, soothe scalp infection, and beef up the hair follicles. The high nutrition C content in guava leaves also plays a key position in collagen synthesis, that is critical for hair shape and electricity.

POTENTIAL INGREDIENTS

Psidium guajava (Guava):



Psidium guajava (generally known as Guava) leaves and now and again fruit extracts are broadly used in traditional and herbal hair care due to their rich phytochemical content material.

Benefits of *Psidium guajava* for Hair:

1. Prevents Hair Loss

Guava leaves are wealthy in antioxidants and anti inflammatory compounds, which assist reinforce hair follicles and decrease oxidative strain, a chief contributor to hair loss.

2. Promotes Hair Growth

The presence of nutrition B and C stimulates movement in the scalp, enhancing nutrient transport to follicles, which encourages hair regrowth.

3. Reduces Dandruff and Scalp Irritation

Its antimicrobial and antifungal homes help combat dandruff, dryness, and minor scalp infections.

4. Strengthens Hair Roots

Tannins and flavonoids assist tighten scalp skin and roots, lowering hair fall and breakage.

5. Enhances Shine and Smoothness

Regular use of guava leaf rinses can make hair smoother, shinier, and much less prone to tangling.

Oryza sativa (Rice):



Oryza sativa (normally called rice) is broadly utilized in hair care, specially inside the form of rice water or rice bran oil. It has been used in traditional Asian splendor practices for centuries due to its rich content material of nutrients that advantage hair strength, shine, and growth.

Parts of *Oryza sativa* Used for Hair:

1. Rice Water (fermented or undeniable)
2. Rice Bran Oil
3. Rice Protein Extract

Benefits of *Oryza sativa* for Hair:

1. Promotes Hair Growth

Fermented rice water carries pitera, a byproduct wealthy in amino acids and vitamins which can help stimulate faster and more potent hair growth.

2. Strengthens Hair Shaft

Inositol, a key compound in rice, penetrates the hair shaft and enables restore and shield hair from internal out, reducing split ends and breakage.

3. Enhances Hair Shine and Smoothness

Rice water acts as a natural conditioning rinse, smoothing the cuticle layer and enhancing shine.

4. Improves Scalp Health

Rice bran oil has anti inflammatory and antioxidant houses that soothe the scalp and decrease flaking or infection.

5. Protects Hair from UV and Pollution

Gamma-oryzanol in rice bran oil acts as a natural UV protectant, that's specifically helpful for chemically dealt with or coloration-treated hair.

Aloe Vera



Aloe vera (botanical call: Aloe barbadensis miller) is one of the maximum extensively used herbal elements in hair care due to its hydrating, recovery, and scalp-soothing houses. It includes over 75 bioactive compounds useful for each scalp health and hair electricity.

Benefits of Aloe Vera for Hair:

1. Moisturizes and Conditions

Aloe vera gel is a natural humectant—it attracts moisture to the scalp and hair shaft, leaving hair smooth, clean, and possible.

2. Soothes Scalp Irritation

Its anti inflammatory and cooling residences assist calm itching, redness, or flaking—mainly useful for those with dandruff or psoriasis.

3. Promotes Hair Growth

Proteolytic enzymes in aloe assist get rid of dead pores and skin cells from the scalp and unclog hair follicles, allowing hair to develop extra freely.

Four. Strengthens Hair Strands

Vitamins A, C, and E promote healthy mobile turnover inside the scalp and enhance hair elasticity, lowering breakage and split ends.

5. Reduces Dandruff

Aloe's antifungal and antimicrobial houses assist control the Malassezia yeast that reasons dandruff.

6. Balances Scalp pH

Helps keep a healthy pH of around 5.5, which is right for hair/scalp barrier characteristic.

Rose Water



Rose water—distilled from *Rosa damascena* or *Rosa centifolia*—is a mild, aromatic, and healing ingredient used in hair care, specially in natural and Ayurvedic formulations. It is thought for its hydrating, anti inflammatory, and balancing effects at the scalp and hair.

Benefits of Rose Water for Hair:

1. Soothes Scalp Irritation

Rose water has anti-inflammatory and cooling properties, making it best for itchy, infected, or touchy scalps (e.g, as a result of dandruff, eczema, or product buildup).

2. Balances Scalp pH

Rose water enables maintain a natural scalp pH (~five.Five), which can save you dryness and decrease extra oiliness.

3. Hydrates and Refreshes Hair

Its water base and floral compounds provide lightweight hydration—best for dry or brittle hair without adding grease.

4. Reduces Dandruff

The slight antimicrobial residences can help reduce bacterial and fungal activity contributing to dandruff.

5. Adds Shine and Smoothness

Rose water helps clean the hair cuticle, including herbal shine and decreasing frizz.

6. Acts as a Natural Fragrance

Its first-rate floral fragrance makes it a herbal fragrance for hair, with out the use of synthetic alcohol-primarily based fragrances.

Almond Oil



Almond oil—specifically sweet almond oil (*Prunus amygdalus dulcis*)—is a nutrient-wealthy, light-weight oil extensively utilized in hair care for its moisturizing, strengthening, and smoothing houses. It's best for each scalp and hair shaft treatments and suits maximum hair kinds.

Benefits of Almond Oil for Hair:

1. Moisturizes and Softens

Its emollient residences assist seal moisture into the hair shaft, making it perfect for dry, brittle, or frizzy hair.

2. Reduces Hair Fall

Magnesium and diet E help support hair at the basis, reducing breakage and hair fall due to weakened strands.

3. Promotes Hair Growth

The oil stimulates blood float to the scalp, encouraging hair follicle activation and growth when utilized in regular scalp massages.

4. Fights Dandruff and Scalp Irritation

Almond oil has anti-inflammatory and mild antimicrobial houses which can soothe itching, dryness, or flaking.

5. Adds Shine and Improves Texture

It smooths the cuticle layer, assisting to reduce tangles and frizz at the same time as enhancing shine.

6. Protects Against Damage

Rich in antioxidants, almond oil enables defend hair from UV harm and pollution.

SUITABLE TYPES OF HAIR

1) Straight Hair-

This hair type is evidently immediately from root to tip. It lies flat at the scalp and displays greater mild, making it appear vivid. Straight hair has a tendency to come to be oily fast due to the fact natural oils journey effortlessly down the hair shaft.

- Very exceptional, tender, and flat with little to no volume.
- Straight however with a few volume and medium texture.
- Thick, coarse, and straight with moderate bends or waves.

2) Wavy Hair-

Wavy hair has a loose "S" shape. It is greater liable to frizz than directly hair but no longer as dry as curly or coily hair. This hair type is versatile and may be styled instantly or curly.

- Fine, loose waves with minimal frizz.
- Medium waves with a few frizz and extra defined shape.
- Thick, coarse waves that shape unfastened curls and are prone to frizz.

3) Curly Hair

Curly hair has virtually defined loops or spirals. It tends to be drier because the curls make it harder for scalp oils to reach the ends. It needs moisture and definition to reduce frizz.

- Loose, big curls with shine and soar.
- Tighter, springy curls with greater quantity and dryness.
- Tight, corkscrew curls that are densely packed and prone to shrinkage.

4) Coily/Kinky Hair

This hair kind has very tight curls or zig-zag styles. It is the maximum fragile hair kind, with the best danger of dryness and breakage. It requires deep moisture, gentle dealing with, and defensive styling.

- Soft, properly-described coils with an S-pattern.
- Less described, fluffy curls with a Z-sample.
- Very tight, fragile coils with little visible definition; shrinks the maximum.

NUTRITIONAL VALUE OF RICE

Carbohydrates:

Major source of power.

Protein:

Contains vital amino acids (though not whole).

Vitamins:

B vitamins: Thiamine (B1), Niacin (B3), Riboflavin (B2), and Folate.

Minerals:

Iron, magnesium, phosphorus, potassium, and zinc.

BOTANICAL PROFILE OF ORYZA SATIVA (RICE) AND PSIDIUM GUAJAVA (GUAVA)

Psidium guajava



Oryza sativa

Botanical Name	Oryza sativa	Psidium guajava
Kingdom	Plantae	Plantae
Division	Magnoliophyta	Magnoliophyta
Class	Liliopsida	Magnoliopsida
Order	Poales	Myrtales
Family	Poaceae	Myrtaceae
Genus	Oryza	Psidium
Species	Oryza sativa	Psidium guajava

MECHANISM OF ACTION OF PSIDIUM GUAJAVA ON HAIR AND SCALP

Psidium guajava leaves include a complicated array of bioactive compounds consisting of quercetin, guaijaverin, catechins, and gallic acid, which work synergistically to sell scalp fitness and hair first-class thru more than one pathways.

1. Modulation of Scalp Microbiome:

Recent research propose that guava leaf extracts help balance the scalp microbiome by way of selectively inhibiting pathogenic microbes while helping useful bacteria. This microbial equilibrium reduces scalp inflammation and creates an optimal surroundings for healthful hair follicle function.

2. Inhibition of 5-alpha Reductase Enzyme:

Certain flavonoids in guava leaves had been shown to mildly inhibit 5-alpha reductase, the enzyme accountable for changing testosterone into dihydrotestosterone (DHT). DHT is related to androgenic alopecia (pattern hair loss). This inhibition can lessen follicular miniaturization and slow hair thinning.

3. Activation of Wnt/ β -catenin Signaling Pathway:

Emerging evidence suggests that polyphenols in guava leaves can also prompt the Wnt/ β -catenin pathway, a key regulator of hair follicle proliferation and cycling. Activation of this pathway promotes transition from the resting (telogen) section to the lively increase (anagen) phase, encouraging hair regeneration.

4. Enhanced Scalp Barrier Function:

The high content material of saponins and tannins in guava leaves strengthens the scalp's lipid barrier, preventing transepidermal water loss. This preserves scalp hydration and prevents dryness-induced follicle strain, consequently preserving an environment conducive to healthy hair increase.

5. Anti-Glycation Effects:

Glycation — the binding of sugar molecules to proteins — can stiffen scalp collagen and reduce its elasticity, negatively affecting hair follicle health. Guava leaf antioxidants have been located to inhibit glycation reactions, maintaining the structural integrity of scalp connective tissue.

6. Upregulation of Keratin Expression:

Guava leaf phytochemicals might also upregulate keratin gene expression in hair follicle cells, enhancing keratin synthesis that's essential for hair shaft strength and elasticity, main to decreased breakage and advanced hair texture.

MECHANISM OF ACTION OF ORYZA SATIVA ON HAIR AND SCALP

1. Rich Source of Inositol for Hair Strengthening:

Rice water carries inositol, a carbohydrate that penetrates the hair shaft and repairs broken hair by filling in cracks and reducing floor friction. This effects in stronger, smoother hair much less prone to breakage.

2. Antioxidant Protection via Ferulic Acid and Tocopherols:

Oryza sativa extracts are abundant in ferulic acid and vitamin E (tocopherols), which neutralize loose radicals at the scalp and hair follicles, preventing oxidative pressure-related damage that ends in hair growing old and thinning.

3. Enhancement of Hair Follicle Nutrition:

The vitamins B-complex and minerals in rice water improve microcirculation inside the scalp, making sure higher delivery of vitamins and oxygen to hair follicles, thereby stimulating more healthy hair boom cycles.

4. Moisture Retention thru Polysaccharides:

Rice water consists of natural polysaccharides that shape a lightweight protective film on hair strands and scalp skin, locking in moisture and stopping dryness and scalp flakiness.

5. Reduction of Scalp Inflammation:

Bioactive peptides in rice extracts showcase anti inflammatory houses that soothe angry scalp conditions together with dandruff and eczema, creating a balanced surroundings for foremost hair increase.

6. Stimulation of Keratinocyte Proliferation:

Oryza sativa additives promote the proliferation of keratinocytes—the number one cells in the hair follicle and dermis—assisting faster hair regeneration and improved scalp barrier feature.

7. Improvement of Hair Elasticity and Shine:

Amino acids and vitamins in rice water repair hair cuticle integrity, improving elasticity and improving herbal hair shine with the aid of smoothing the hair floor and lowering roughness.

CONCLUSION

The aggregate of Psidium guajava and Oryza sativa in herbal hair serum offers a promising natural alternative for promoting healthy hair and scalp. Psidium guajava offers mighty antioxidant, antimicrobial, and hair-strengthening properties, at the same time as Oryza sativa contributes critical amino

acids, nutrients, and inositol that repair and nourish hair fibers. Together, these botanicals paintings synergistically to reduce hair fall, enhance hair increase, enhance texture, and defend against environmental harm. With developing purchaser interest in plant-primarily based and chemical-free hair care answers, such formulations have large capacity in each therapeutic and beauty applications. Further clinical research and system optimization can assist set up their efficacy and pave the manner for wider business attractiveness.

Psidium guajava (guava) and *Oryza sativa* (rice) exhibit huge capacity as natural elements in hair care formulations due to their rich phytochemical profiles and beneficial residences. Guava leaves are wealthy in antioxidants, vitamins (especially vitamin C), and antimicrobial compounds, which guide scalp health, lessen dandruff, and sell hair increase by means of strengthening hair follicles. Rice, particularly through rice water, offers amino acids, nutrients B and E, and inositol, contributing to improved hair elasticity, shine, and decreased floor friction. The synergistic use of guava and rice in hair care products gives a natural, cost-powerful, and sustainable alternative to artificial remedies, making them treasured assets within the development of herbal and beauty hair care packages. Further clinical research and system advancements can beautify their efficacy and industrial viability.

Moreover, these botanical extracts align well with the growing patron call for for natural and chemical-unfastened beauty merchandise. The documented antimicrobial, anti-inflammatory, and antioxidant residences of guava, in conjunction with the conditioning and strengthening results of rice water, offer a systematic foundation for his or her use in addressing common hair troubles including dandruff, hair thinning, dryness, and brittleness.

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