Eurasian Journal of Analytical Chemistry
ISSN: 1306-3057 OPEN ACCESS 2024 19 (1): 435-441

Exploring The Benefits of Nutmeg, Rice Water, Aloe Vera, And Green Tea In Herbal Face Wash

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Abstract:
This article provides an overview of using herbal face for the enhancement of skin beauty. Because of its many advantages, herbal face wash that include organic ingredients which are becoming more and more popular in the cosmetics industry. Ingredients like rice water, nutmeg, aloe vera, and green tea are used. These botanicals are well-known for their medicinal qualities and for their ability to cleanse, moisturize, and brighten the skin. Rich in essential oils, nutmeg offers antibacterial and antioxidant properties, while aloe vera is well-known for having a high vitamin, mineral, and enzyme content that supports skin hydration and healing. A long-kept secret in beauty, rice water is high in proteins, vitamins, and antioxidants that protect and nourish skin. Green tea improves skin health and protection by delivering antioxidant and antiviral effects because to its strong polyphenols and catechins. These substances in addition to face washes promotes skin vitality and is in line with the global trend towards natural and conventional medicine-based beauty products. The growing inclination of consumers towards natural skincare products that are both kind and effective on their skin is shown by the surge in demand for herbal cosmetics.

Keywords: Nutmeg, Aloevera, Rice water, Green tea, herbal face wash, antioxidant effect.

Introduction

The history of the herbal cosmetics industry includes some very dismal periods from roughly six centuries ago in Western and European countries. Then, mixtures and pastes were employed to whiten the face; this practice persisted for more than 400 years. Herbal cosmetics are made in a wide range of varieties and are frequently used in daily life. The public is very fond of herbal cosmetics, including herbal shampoo, conditioner, soaps, face washes, and many more[1]. Face washes made from fresh herbs or their extracts are designed to improve skin health and enhance beauty. They boost circulation and thoroughly cleanse the face, helping to remove particles, bacteria, and sebum that clog pores and causes the skin to appear dull[2]. Herbal face washes often utilize botanical extracts, essential oils, and other natural ingredients known for their therapeutic effects. These can include herbs like aloe vera, neem, turmeric, and green tea, each celebrated for its specific skincare benefits. Promising to soothe irritation, fight acne, and enhance complexion, herbal face washes have gained popularity among consumers looking for gentler, more holistic skincare solutions[3]. Herbal face washes remove excess oil without depleting the skin of its nutrients and are rich in plant-based ingredients. They gently cleanse the face, leaving the skin clean and radiant[4]. Currently, countries around the world recognize and appreciate this ancient form of medicine, leading to a high demand for Indian herbal drugs, which are experiencing rapid growth with an annual increase of nearly thirty percent. In recent years, there has been a significant rise in global demand for herbal remedies, herbal skincare products, and herbal cosmetics[5].

NUTMEG

Nutmeg originated in Indonesia's Banda Islands and was discovered by the Portuguese in 1512. The name "Nutmeg" is derived from the Latin term *nux muscatus*, meaning "musky nut". The main profitable species of genus Myristica is Myristica fragrans. It thrives in hot, humid climates. It grows well in sandy loam, clay loam, and red laterite soils. In India it is called as Jaiphal, Pala in Indonesia, Josat at-Tib in Arabic. Jaifal in Urdu, Muscade in French, Moschokarido in Greek and Roudoukou in China[6]. As early as 200 BC, Romans journeyed from Egypt across the Indian Ocean to trade with the natives for supplies of black pepper, cinnamon, cloves, ginger, and nutmeg[7]. Nutmeg has been prescribed medicinally by Hindu physicians for headaches, nerve fevers, cold fevers, foul breath, and intestinal weakness[8].Nutmeg (*Myristica fragrans*) is an evergreen tree that belongs to the Myristicaceae family, a group of flowering plants native to Asia, Africa, the Pacific islands, and the Americas[9]. The Pharmacological effects of nutmeg are anti-bacterial, anti-microbial, anti-fungal, hypoglycemic, anti-diabetic, anti-inflammatory, anticancer, anti-oxidant, anti-diarrhoeal, anti-cancer, anti-diabetic, etc. [10]

Botanical Description[11]

Leaves	Slightly bluish, 7.5-12.5cm in length and 3.75-5cm in width
Flowers	The flowers are drooping and can be unisexual or occasionally bisexual.
Fruits	The fruit is pear-shaped and yellow.
Seeds	Seeds are broadly ovoid 2 to 3 cm long, firm, fleshy, whitish and transversed by red-brown veins.

Taxonomical Classification[12]

Kingdom	Plantae
Subkingdom	Tracheobionta
Superdivision:	Spermatophyta
Phylum	Angiosperms
Clade	Magnoliid
Order	Magnoliales
Family	Myristicaceae
Genus	Myristica
Species	Myristica Fragrans

Chemical Constituents[13]

Seeds of nutmeg contain essential oil such as Sabinene (41.7), α-pinene (9.4%), β-pinene (7.3%), terpine-4-ol (5.8%), limonene (3.7%), safrole (1.4%) and myristicin (2.7%).Fixed oil of nutmeg are Myristic acid, trimyristin, glycerides, along with stearic, lauric, linoleic, and palmitic acids, are the primary constituents of nutmeg fixed oil. The aromatic ether of nutmeg includes myristicin, eugenol, safrole, elemicin, eugenol derivatives.

Extraction Methods

The methods consist of optimized extraction procedures: microwave-assisted extraction, ultrasound-assisted extraction utilizing ultrasound bath or sonotrode, gas chromatography-mass spectrometry (GC-MS) analysis method[14], conventional maceration[15], supercritical CO2 extraction[16].

Physicochemical Properties

Moisture content: 10.70±0.15
Crude Fibre: 13.49±0.80
Acid value: 0.68±0.04
Saponification value: 179.03±3.45[17]

Marketed Products

Sr. No.	Product Name	Company Name	Use
1	Nutmeg gel[18]	--	Used as an anti-inflammatory gel.
2	Triphala tablets	Baidyanath	It is used in relieving constipation and acts as natural detoxification agent.
3	Jaiphal foaming face wash	Dr. khan	It is used for cleansing skin, glowing skin and in treatment of anti-acne.
4	Herbal face wash gel[19]	--	It is used for its anti-acne activity.
5	Nutmeg weekly face scrub	Rosegrey	It is used in the treatment of acne, calms down aggravated skin and lightens dark spots.

ALOEVERA

Aloe Vera is a popular herb across many nations worldwide. Its use has been documented in various cultures, dating back to ancient Greek, Egyptian, and Roman times[20]. The Aloe vera plant, is well known for its health, medicinal, beauty, and skincare properties. The name Aloe vera comes from the Arabic word "Alloeh," meaning "shining bitter substance," while "vera" in Latin means "true."[21]. It develops primarily within the dry locales of Africa, Asia, Europe and America. In India, it is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra and Tamil Nadu[22]. Aloe is the dried latex of leaves from several species of Aloes, including Curacao and Cape Aloe, Aloe barbadensis Miller, etc. These are all members of the *Liliaceae* family [23]. It is used in Ayurveda, Siddha and Unani system of medicines. Aloe vera *(Aloe barbadensis miller)* contains over 200 compounds, about 75 of which exhibit biological activity[24].The pharmacological effects of aloe vera are wound healing property, moisturizing

and anti-aging effect, immune system restoration, anti-inflammatory action, anti-diabetic action, anti-mutagenic effects, anti-oxidant effects, anti-bacterial, muscle pain, laxative effects[25].

Taxonomical Classification[21]

Phylum	Angiosperms
Clade	Monocots
Order	Aspargales
Family	Asphodelaceae
Subfamily	Asphodeloideae
Genus	Aloe
Species	Aloe vera

Botanical Description[22]

The plant is either stemless or has a very short stem, measuring up to 25 cm in length, with around 20 leaves forming a dense, thick rosette. The leaves can grow up to 40-50 cm long and 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 and spaced 10-20 mm apart. A single leaf can weigh between 1.5 and 2 kg. The roots of the aloe are generally brief and lay flat implanted within the earth.

Chemical Composition[22]

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 of anthraquinones like aloin, barbaloin, isobarbaloin, anthranol, aloe-emodin, ester of cinnamic acid, emodin makes the aloevera more effective.

Extraction Methods

The oldest and most practical method of laboratory extraction is extraction in hot water and ethanol, which has been applied extensively in industry[26], while other methods are Soxhlet extraction method, ultrasound technique, and microwave extraction method [27].

Physicochemical Properties[28]

Fiber content: 0.074 to 0.088 %
pH Value: 3.5-4.7**Aloe vera face wash:** [30]

Marketed Products

No.	Product name	Brand	Use
1	Aloe vera juice	Indi Spice	It Is used for purifying blood, for constipation, for weight management, and beneficial for hair and skin.
2	Aloe vera herbal ointment[29]	--	It is used for its antioxidant and anti-inflammatory action.
3	Aloevera Face scrub	Quat	It gives the brightening and shining effect on skin and results in pimple free skin.
4	Aloe vera toothgel	Forever	It cleans the tooth and leaves the mouth with a refreshing effect.
5	Aloe vera face wash	--	It delivers the cleansing effect on skin.

RICE WATER

The majority of people in Asia eat rice as a staple diet, making it the region's most prominent cereal. Yao women used rice water to treat their hair because their hair doesn't start to fade until well into their eighties or later beyond[31]. Since the dawn of civilization, people have used rice as a life-giving grain in the humid sections of West Africa and, to a lesser degree Asia[32]. Between 1980 and 2004, the global production of rice expanded from 520 million to 605 million tons[33]. Archaeological and historical evidence points to South-east Asia for O. sativa and Africa for O. glaberrima as the main centers of origin for cultivated rice[32]. The two species are Oryza glaberrima and Oryza sativa. Oryza glaberrima is only grown in South Africa, Oryza sativa is the species that is grown most commonly worldwide. Nowadays, rice in the world is produced in China, India, Indonesia, Bangladesh, Vietnam, Thailand, Myanmar, Pakistan, Philippines, Korea, and Japan[31]. The pharmacological effects

of rice are antioxidant, anti-inflammatory, diabetes and metabolic syndrome, hypercholesterolemia and cardiovascular disease, effects on gastrointestinal and excretory systems, immune system, anti-oxidant and skin aging, etc. [34].

Taxonomical Classification[31]

Kingdom	Plantae
Division	Magnoliophyte
Class	Liliopsida
Order	Poales
Family	Poaceae
Genus	Oryza
Species	Sativa
Tribe	Oryzeae

Chemical Constituents[31]

Rice is high in vitamin B complex vitamins including thiamin, riboflavin, and niacin and low in protein and fat. It also has a high carbohydrate content. The main source of carbohydrates in rice is starch, which is composed of amylose and amylopectin. The composition of a rice grain is 12% water, 75–80% carbohydrates, and just 7% protein that includes all of the essential amino acids. Because of its higher lysine concentration (about 4%), it has a high biological value (74%), as well as a protein efficiency ratio (2.02–2.04%). There are traces of iron, copper, zinc, manganese, and magnesium along with calcium, magnesium, and phosphorus.

Rice by product[31]

Fermented Rice Water: Rice water that has been allowed to ferment and turned somewhat sour is known as fermented rice water. It has high levels of minerals, B and E vitamins, antioxidants. It includes flavonoids and phenolic compounds may lessen environmental free radical damage.

Preparation of rice water by three methods[31]

Water prepared by boiling process: For thirty minutes, 400 g of whole grains of paddy rice were boiled in one liter of deionized water. Before being used, rice water was frozen at -30°C after being filtered through cotton gaze.

Water prepared with intact grain: After combining 1 L of deionized water with 400 g of whole grains of paddy rice, the mixture was shaken for 24 hours at room temperature. After passing through a cotton gauze filter, the rice water was frozen at -30°C until it was needed.

Water prepared with crushed grain: First is to grind 400 g of paddy rice grains into smaller bits for 10 seconds. The mixture was then combined with 1 L of deionized water and allowed to shake at room temperature for a whole day. After that, rice water was frozen at -30 ◦C after being filtered through cotton gaze until employed.

Extraction Methods

The extraction methods are Sub critical water extraction[35], ultrasonic enzymatic extraction[36], Ultrasound assisted extraction[37], microwave-assisted method[38], subcritical carbon dioxide extraction[39], etc.

Marketed Products

No.	Product name	Brand	Use
1	Rice face pack[40]	--	It cleanses pores, removes excess oil.
2	Rice hair oil	Chic beauty	It is used for the repairing the damage in hair.
3	Rice water herbal shampoo[41]	--	It is used for dry and damaged hair treatment.
4	Rice water foaming face wash	Atulya	Used for the glass skin effect.
5	Rice face scrub	Mamaearth	It is used for making the skin clear and give a glassy appearance.

GREEN TEA

As far back as 500,000 years ago, green tea was used medicinally in several Asian nations, including Thailand, China, Japan, and India. Chinese mythology states that in 2737 BC, Emperor Sheng Nung, also known as the "Divine Healer," learned that tea leaves had medicinal properties and shared this information with others onto his topics. It is used in traditional Chinese and Ayurvedic medicine[42]. After water, tea *(Camellia sinensis)* is one of the most significant drinks drunk globally. *Camellia sinensis* is grown in about thirty countries worldwide. The countries of Japan, China, India, and various Middle Eastern and North African nations are the main consumers of green tea[43].The significance of tea in Chinese daily life is demonstrated by the old Chinese proverb, "Better to be deprived of food for three days, than tea for one." The health benefits of green tea have long been recognized by the Chinese times which dates back at least 4,000 years[44]. The medicinal properties of green tea are

Cardiovascular, Cancer, Diabetes, Weight loss, Antiviral[42], Antioxidant, Antihypertensive, Solar ultraviolet protection, glucose tolerance and insulin sensitivity, Antibacterial[45].

Botanical Description[46]

When grown for its leaves, this evergreen shrub or small tree is often cut to a height of less than two meters. With seven to eight petals, the yellow-white flowers have a diameter of 2.5 to 4 cm. The Camellia sinensi 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 of making tea, the young, light green leaves with short white hair on the underside are preferred.

Taxonomical Classification[46]

Kingdom	Plantae
Order	Ericales
Family	Theaceae
Genus	Camellia
Species	C. sinesis
Binomial name	Camellia sinensis (L.) Kuntze

Chemical Composition[46]

Polyphenols are present which mostly consist of flavonols, which are also known as catechins. Catechin, gallaogatechin, epicatechin, epigallocatechin, epicatechin gallate, and epigallocatechin gallate are the six main catechin chemicals present in it. The most potent polyphenol found in green tea is called epigallocatechin gallate. In additional polyphenols, it includes theogallin in amounts of 2% to 3%. Other green tea ingredients include 6% to 8% of minerals. Cellulose, pectins, glucose, fructose, and sucrose are the carbohydrates present in green tea. Linoleic and a-linolenic acids are the lipids present in green tea. Theanine, glutamic acid, tryptophan, glycine, serine, aspartic acid, tyrosine, valine, leucine, threonine, arginine, and lysine are the amino acids present in green tea. Alkaloids like theobromine, caffeine, theophylline and very small amount of other methylxanthines are present.

Extraction Methods[47]

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[48]

Solubility: 13.8 mg/ml
pH: 5.3
Total polyphenols: 381.1 mg of gallic acid/gm of extract

Marketed Products

Sr. No.	Product	Brand	Use
1	Green tea chewing gum[49]	--	They are used for periodontal disease.
2	Green tea tablets	Dr. venture	It is used for loosing wight
3	Green tea face wash gel[50]	--	It is used to fight with pimples, for controlling excess oil, and for unclogging of pores.
4	Green tea seed serum	INCI decoder	It moisturizes the skin and acts as an antioxidant.
5	Tulsi green tea	Organic India	It is used for stress relief, as an anti-oxidant and as an immunomodulator.

CONCLUSION

People today require a cure for their problems that is free of adverse effects. Herbal components made it possible to create cosmetics with no side effects. Herbal face wash are thought to be a long lasting and effective techniques to improve skin appearance. As a result, the current effort is an excellent attempt to manufacture a herbal face wash using naturally available substances such as nutmeg, aloe vera, rice water and green tea. They provide beneficial effect on skin which helps in the enhancement of it. These natural ingredients also promote skin vitality and align with the global trend towards natural skincare products. The demand for herbal cosmetics is increasing as consumers seek gentle and effective skincare solutions.

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