

## Antimicrobial and Hair Health Benefits of Arwa Oil: A review of Natural Plant Extracts

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**Abstract:** Hair loss can be a very stressful experience for people suffering from it. Plus, stress can make the problem worse by triggering the release of a hormone called cortisol. Cortisol adversely affects the functioning of the hair follicles, causing extra shedding. Your hair is exposed daily to all sorts of environmental irritants, toxins, and pollutants, and these elements can significantly damage the quality of your tresses and impede hair growth. Poor hair health, in turn, feeds a lot of anxiety about one's appearance, which can lower your self-confidence. Different hair problems require different solutions depending on the underlying cause. This article will focus on a particular remedy that combines the hair benefits of Arwa oil for the treatment of hair problems hair loss and split ends contains an effective and distinct group of natural oils selected with a superior pubescence extracted from medicinal plants useful for humans which it contains on [olive oil, clove oil, sunflower oil, fenugreek oil, Watercress oil, peppermint oil, onion oil, garlic oil and Jojoba oil. All those ingredients of natural oils that are useful for hair are collected in one product called Arwa hair oil. In certain proportions that work to nourish hair follicles and treat the scalp and useful in the treatment of scalp inflammation and rich in antioxidants, vitamins and nutrients necessary for the growth of healthy hair strong and attractive to improve hair growth. We will start by mentioning the benefits of using each ingredient separately from the group of important natural oils that Arwa oil contains to treat hair problems and scalp infections and explain the importance of using each ingredient when using it for hair, which in the end when you collect them and add them all in one compound gives many benefits that are limitless, but we will mention some uses and benefits when putting the natural oils found in Arwa oil for hair. Hair loss can be caused by a variety of factors, including genetic tendencies, environmental triggers, chemical exposure, medicine, nutritional deficiency, extreme stress, or a long illness, among others. Alopecia is divided into several categories based on the pattern and causes of hair loss. To treat the condition of hair loss [alopecia], treatments are available in both natural and synthetic forms; however, natural products are gaining popularity due to fewer side effects and better formulation strategies for natural product extracts. Plants have been used to promote hair growth since ancient times, according to Ayurveda, Chinese, and Unani medical systems. Minoxidil and finasteride, which have been approved by the FDA, remain our preferred retailers in the treatment of hair loss. Erythema, scaling, pruritis, dermatitis, itching, and other side effects have been linked to the use of these synthetic compounds. So, to deal with the problem of hair loss, we looked into Nature's treasures, which have been used as a form of herbal oil or extracts since ancient times. This article provides a comprehensive overview of herbal oils or extracts used to treat hair loss [alopecia].

**Keywords:** Natural oils, Hair loss, Treatment for rough hair, Healthy hair, Antimicrobial Ingredients.

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## INTRODUCTION

Medical Hair Oils with Antimicrobial Properties  
Medical or herbal hair oils often contain plant-based ingredients known for their antimicrobial effects, which help combat scalp infections, dandruff, and fungal

growth. Here's how they work and what makes them effective:

### Antimicrobial Ingredients

Many oils are infused with herbs and natural extracts that target bacteria and fungi nigella sativa [Black seed oil]: Effective against *Staphylococcus aureus* and

*Candida albicans* Mechanism of Action disruption of microbial membranes essential oils can penetrate and damage bacterial and fungal cell walls [5]. Inhibition of growth some compounds interfere with microbial replication or metabolism. Anti-inflammatory support reduces scalp irritation, which can otherwise promote microbial colonization [11]. Proven Efficacy Strong inhibition zones against *Streptococcus pyogenes*, *Escherichia coli*, *Candida albicans*, and *Aspergillus niger* Herbal anti-dandruff oils were effective against *Malassezia spp.* and *Staphylococcus epidermidis*, common culprits in dandruff and scalp irritation. Reduces dandruff and itchiness, prevents scalp infections, supports healthy hair growth by maintaining a clean scalp environment [14].

Hair loss is a condition in which hair falls out from areas of the skin where it is normally found, such as the scalp and the body. This loss obstructs the hair's many biological functions, including sun protection [primarily for the scalp] and sweat gland product dispersal [10]. Patients with hair loss suffer greatly because hair cover to the scalp is psychologically important in our society. Alopecia is the most common hair disorder, and it is used to describe the patterned loss of scalp hair in genetically vulnerable men and women [17]. Hair plays an important role in mammals' thermal insulation as well as social and sexual communication, both visually and by dispersing scents secreted by skin glands. Humans are relatively hairless in comparison to other species, and human hair is not known to be important for species survival. It is, however, still a valuable cosmetic asset [22]. Though hair loss [alopecia] is not a debilitating or life-threatening condition, the prospect of going bald can cause emotional distress and a traumatic experience for those who experience it prematurely or excessively. Hair enhances a person's appearance and personality. Today, everyone is wary of taking a second look [30]. Hair fall is normal because the old hair is replaced by new hair growth. If you have a lot of hair loss, you should get help. The article reviews a number of studies that show the efficacy of herbal drugs or isolated compounds in promoting hair growth [12]. The mechanism of action of herbal drugs in preventing hair loss or promoting hair growth is also described. The use of plant-based extracts with antioxidant properties has been shown to support hair health by combating oxidative stress, which can contribute to hair loss and scalp damage [1]. For instance, phytochemicals in plant extracts, such as those found in *Euphorbia cuneata*, exhibit potent antioxidant activities that may protect hair follicles from oxidative damage, potentially enhancing hair growth and scalp health [9].

#### HERBAL EXTRACT/OIL FOR THE TREATMENT OF HAIR LOSS:

Despite the overwhelming influence and our reliance on modern treatment and large advances in synthetic drug, herbal treatment continues to be the mainstay of about 70-80 percent of the world's population in general in

developing countries for primary health care due to better cultural acceptability and compatibility. Natural drug treatments are for this reason a priceless as good as a valuable present from nature [23]. They were handled with care and admire in the early days. The future pattern is more in the direction of the whole thing—Natural and it might be valuable looking into the plant world for ultra-modern medicine. There are a variety of plants and extracts used in different parts of the world for hair care that promote hair growth, as well as a variety of herbal products that promote hair growth [16]. Many poly-herbal mixtures are used as hair tonics, hair growth promoters, hair conditioners, hair cleansing agents, anti-dandruff agents, and treatments for alopecia and lice infection all over the world. To deal with the problem of hair loss, we looked into Nature's treasure and discovered a number of herbs that have been shown to be effective in the treatment of alopecia. Because they are natural drugs, they have a number of advantages, including patient compliance, fewer side effects, and multiple modes of action for the treatment of alopecia [7]. Nutritional Support: Calcium, iron, copper, chromium, iodine, zinc, and magnesium are all required minerals for healthy hair growth.

#### Benefits of Olive Oil Available and found in Arwa hair oil:

##### 1. Moisturization and Hydration

The monounsaturated fatty acids in olive oil, primarily oleic acid, possess a molecular structure that enables deep penetration of the hair shaft [cuticle and cortex]. This facilitates intrinsic moisturization, which is particularly beneficial for xeric [dry], brittle, or chemically damaged hair. By restoring internal hydration levels, olive oil improves hair elasticity, reduces protein loss, and mitigates breakage [20, 44].

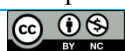
##### 2. Promotion of Anagen Phase Hair Growth

Olive oil may stimulate hair growth through several mechanisms: enhancing microcirculation to the scalp via massage, delivering essential nutrients to the follicle, and reducing follicular inflammation. A seminal 2015 study demonstrated that oleuropein, a phenolic compound in olive oil, induced the anagen [growth] phase in telogen-stage murine hair follicles, suggesting a potential for reactivating dormant human follicles [29, 45].

##### 3. Reduction of Mechanical and Chemical Damage

Olive oil forms a protective lipid layer on the hair shaft, reducing surface friction and minimizing damage from brushing and styling. By increasing elasticity and pliability, it allows hair to withstand mechanical stress without fracturing. This prophylactic effect is crucial for preventing split ends and maintaining the structural integrity of damaged hair [4].

##### 4. Enhancement of Optical Properties [Shine and Luster]



The ability of olive oil to smooth the hair cuticle results in a more uniform surface that reflects light coherently, thereby enhancing shine and diminishing the appearance of dullness. This effect is a direct indicator of improved cuticle health and is especially valuable for protecting color-treated hair from environmental degradation [3, 15].

### 5. Treatment of Scalp Dysconditions [Dandruff and Psoriasis]

The anti-inflammatory, emollient, and moisturizing properties of olive oil make it a beneficial adjunctive treatment for flaky scalp conditions like pityriasis simplex [dandruff] and psoriasis. It functions by reducing scalp desquamation [flaking], relieving pruritus [itching], and modulating sebum levels. Research in the *Journal of Dermatological Treatment* supports its efficacy in ameliorating symptoms of scalp psoriasis [24].

### 6. Chemoprotective Barrier

When applied prior to heat styling, olive oil forms a protective film that reduces the direct impact of high temperatures on the keratin structure. Its relatively high smoke point [~375°F or 190°C] ensures stability under common styling conditions, thereby reducing heat-induced protein denaturation and moisture loss [5, 8, 12].

### 7. Improvement of Hair Elasticity

A critical metric of hair health is its ability to stretch and return to its original length without breaking. Olive oil improves elasticity by penetrating the cortex, plasticizing the hair fiber, and supporting its internal protein structure. This leads to increased resilience against daily stressors [2, 13].

### 8. Frizz Control and Humectancy Management

Frizz results from a raised, uneven cuticle that absorbs atmospheric humidity. Olive oil acts as an anti-humectant by smoothing the cuticle and creating a hydrophobic barrier that limits the hair's ability to absorb excess moisture from the environment, thereby maintaining smoothness and definition [37, 41].

### 9. Conditioning and Detangling

As a natural conditioning agent, olive oil provides excellent slip, which reduces tangling and improves combability. Its deep moisturizing capabilities rival many synthetic conditioners, offering manageability without the use of silicones or polymers that can cause buildup [18].

### 10. Potential Inhibition of Premature Canities [Graying]

The high antioxidant content of olive oil, including vitamin E and polyphenols, may help combat oxidative stress at the follicular level. This stress is a postulated contributor to the apoptosis of melanocytes [pigment-producing cells]. While not a reversal agent, nutritional

support from olive oil may help preserve melanin function and delay the onset of canities [1, 19, 28].

### 11. Scalp Anti-Inflammatory and Emollient Effects

For conditions such as seborrheic dermatitis or eczema, olive oil can provide symptomatic relief. Its anti-inflammatory properties help reduce erythema [redness] and irritation, while its emollient nature helps to soften and moisturize scaly, compromised scalp skin [21, 35].

### 12. Color Protection and Enhancement

For color-treated hair, olive oil helps seal the cuticle, locking in color molecules and delaying their leaching. This results in longer-lasting color vibrancy. Furthermore, the added light reflection from a smoothed cuticle makes both natural and artificial color appear more dimensional and luminous [33].

### 13. Stimulation of Scalp Microcirculation

The act of massaging olive oil into the scalp stimulates cutaneous blood flow. Enhanced circulation ensures a more efficient delivery of oxygen and nutrients to the hair follicles, a fundamental requirement for healthy growth and potentially increased hair density [25, 31].

### 14. Protection from Environmental Stressors

Olive oil provides a protective film that shields the hair from ultraviolet radiation, which can photodegrade keratin and fade color. Its antioxidant compounds also neutralize free radicals generated by pollution and UV exposure, preventing protein oxidation and cellular damage [3, 42, 46].

### 15. Contribution to Overall Hair Homeostasis

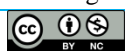
Systematic use of olive oil contributes to comprehensive hair and scalp homeostasis. It strengthens the hair shaft, balances scalp pH, improves texture, and increases manageability, culminating in objectively healthier hair over time [5, 27, 32].

### Clove Properties and Compounds which available and found in Arwa oil for Hair:

Cloves have a long history of use in traditional Chinese medicine and Ayurveda, the system of medicine of ancient India. *Syzygium aromaticum* [clove] is recognized in ethnobotanical and pharmacological literature for its diverse bioactive properties, which may confer significant benefits for scalp and hair health. The therapeutic potential of clove is primarily attributed to its high concentration of antioxidant, anti-inflammatory, and antimicrobial compounds, notably eugenol, gallic acid, and various flavonoids [8]. These properties collectively address several pathophysiological mechanisms underlying common hair disorders.

### 1. Antioxidant Activity and Protection against Oxidative Stress

Cloves are rich in antioxidant compounds, with eugenol being the most predominant. These antioxidants



neutralize free radicals—unstable molecules generated during cellular metabolism—mitigating the state of oxidative stress. Oxidative stress induces cellular damage within the hair follicle and is a postulated etiological factor in numerous hair conditions, including:

- Androgenetic alopecia [male- and female-pattern baldness] [4, 5].
- Alopecia areata, an autoimmune disorder characterized by patchy hair loss [6].
- Premature hair graying [7].
- Hair thinning and weakening [8].

By scavenging free radicals, clove antioxidants may help prevent follicular damage, thereby reducing hair loss, delaying the onset of graying, and improving hair shaft strength and density [43]. Furthermore, eugenol is suggested to enhance cutaneous blood circulation, thereby improving nutrient delivery to the follicle and supporting active growth phases [13].

## 2. Anti-Inflammatory Properties

Chronic scalp inflammation is a known disruptor of the hair growth cycle and is implicated in conditions such as seborrheic dermatitis, dandruff, and psoriasis, which can precipitate hair loss. The anti-inflammatory constituents in clove, particularly eugenol and gallic acid, demonstrate efficacy in reducing inflammatory mediators [36]. This action can help to re-establish a normal follicular environment, conducive to hair growth, and alleviate associated symptoms of pruritus [itching] and discomfort [10, 11, 12].

## 3. Antimicrobial and Antifungal Efficacy

A healthy scalp microbiome is essential for maintaining follicular integrity. Clove extracts exhibit broad-spectrum antimicrobial activity against bacteria, viruses, and fungi [6]. Specific compounds such as eugenol and flavonoids are effective against pathogens associated with scalp infections that contribute to hair loss, including *Candida* species [yeast] and *Trichophyton* species responsible for tinea capitis [scalp ringworm] [14, 15, 16]. By mitigating these infections, cloves promote a healthier scalp environment conducive to hair growth.

## 4. Nutritional Constituents Supporting Hair Structure

Beyond its primary bioactive properties, clove contains micronutrients that contribute directly to hair health:

**Beta-carotene:** A precursor to vitamin A, it aids in the regulation of sebum production. Appropriate sebum levels moisturize the scalp and prevent hair shafts from becoming dry and brittle, reducing breakage [17].

**Vitamin E:** This potent antioxidant further protects against oxidative damage and may improve scalp

circulation, supporting follicular nutrition and imparting shine to the hair shaft [18].

**Omega-3 fatty acids:** Clinical evidence suggests that omega-3s can increase hair density, reduce shedding, and diminish scalp inflammation, contributing to thicker, stronger hair [19, 40].

## Topical Application and Formulation Considerations

For topical application, clove oil is typically diluted in a carrier oil to ensure safety and minimize potential dermal irritation. A common preparation method involves macerating crushed cloves in a suitable carrier oil [e.g., olive, sunflower, or infused oils such as garlic or onion oil]. The mixture is heated gently, often using a water bath method for approximately 30 minutes to facilitate the infusion of bioactive compounds into the carrier oil. After cooling, the oil is rigorously filtered to remove all particulate matter [39].

The resulting formulation, often referred to as a clove-infused oil, can be applied topically. A standard protocol involves massaging the oil gently into the scalp and allowing it to remain for approximately 20 minutes before washing with a gentle shampoo. This practice is generally considered safe and may be used adjunctively with other treatments to support hair growth and fortification [8].

Or after drying the hair well from water, massage the scalp well with Arwa oil to treat hair loss and split ends and make hair healthy, shinier and more attractive [2].

## Benefits of Using Sunflower which available and found in Arwa oil for Hair:

Enhances Softness, Shine, and Smoothness, Experience the softness, shine, and smoothness of your hair with sunflower oil. It is packed with vitamins, minerals, and essential fatty acids that provide nourishment to your tresses. Sunflower oil helps in forming a protective film around the cuticles to reduce friction damage, while its oleic acid prevents hair breakage [38]. Vitamin E, sesame, and antioxidants protect against environmental stressors while increasing hydration levels to keep your locks looking healthy. Rich in Vitamins and Essential Fatty Acids. You'll be amazed by the benefits of sunflower oil for hair. It's packed with vitamins and essential fatty acids, such as Vitamin E, Oleic acid, and Linoleic acid, that help nourish your scalp [10]. Studies show that using this natural ingredient can increase hydration levels in your strands up to 45%. Sunflower oil contains vital nutrients like iron protein, which are beneficial for improving scalp health. It also has a low comedogenic rating, making it suitable even for sensitive skin types. The moisturizing properties make it an excellent lotion substitute. Its oleic acid content also helps control frizz, promoting a glossy shine without weighing down the hair strands. Sunflower oil is beneficial for all natural hair types as its lightweight



properties won't clog the scalp or cause buildup like heavier oils can. With regular use, this versatile ingredient can help improve scalp health too. Try mixing it into your usual shampoo routine for added benefits [17]. Helps With Frizz and Split Ends By incorporating sunflower oil into your hair care regimen, you can enjoy the smoothness and manageability of your locks while taming frizz and split ends. Its moisturizing properties help minimize breakage due to its high amounts of Vitamin E, oleic acid, linoleic acid, and antioxidants. Sunflower oil is an excellent choice as it is rich in essential vitamins and minerals that can nourish the scalp and hair follicles. Finally, sunflower oil is an essential ingredient for any hair care routine. From protecting against breakage to adding shine and smoothness, the oil from the sunflower seed is an ideal choice for nourishing and restoring hair. Fenugreek provides a number of benefits for the hair. It promotes hair growth, reduces hair loss, cleanses the scalp, and exhibits strong antioxidant properties that help protect the hair from damage [1].

Fenugreek oil which available and found in Arwa oil for Hair: are a wonderful ingredient you can add to any hair mask.

They have potent antioxidant and anti-inflammatory properties that help fight hair loss, dandruff, scalp infections, and hair damage.

*Trigonella foenum-graecum* [fenugreek] demonstrates several pharmacological properties that contribute to its efficacy in treating common scalp disorders and promoting hair health. Its benefits are derived from a complex composition of antimicrobial agents, anti-inflammatory compounds, vitamins, minerals, and proteins.

### 1. Management of Dandruff and Scalp Infections

Fenugreek seeds are a source of antimicrobial compounds, including nicotinic acid, which exhibit efficacy against dandruff-causing fungi and other scalp pathogens. Regular topical application of fenugreek seed paste has been shown to significantly reduce dandruff formation and mitigate associated scalp infections [3, 4]. A recent clinical study corroborates the positive effects of fenugreek application on dandruff-affected scalps [12].

### 2. Promotion of Hair Growth and Reduction of Hair Loss

The therapeutic action of fenugreek for hair growth is multi-faceted

**Stimulation of Follicles:** Fenugreek contains flavonoids and saponins, which are associated with increased hair growth and enhanced hair strength. Extracts have been shown to improve cutaneous blood flow, thereby delivering essential nutrients to hair follicles and inducing growth [44].

**Clinical Evidence:** The efficacy of fenugreek seed extract in promoting hair growth is supported by clinical trials. One study on individuals with early-stage hair loss demonstrated its effectiveness in increasing hair growth in both male and female participants. Another study found that a 300 mg dose of fenugreek extract significantly improved hair growth and strength [9, 31].

**Anti-inflammatory Effects:** The oil's anti-inflammatory properties help soothe the scalp and reduce hair fall associated with follicular inflammation, showing particular utility in cases of androgenetic alopecia [35].

**Cellular Repair:** Lecithin, a constituent of fenugreek oil, supports the process of cellular repair and can help reverse damage to the hair follicles, improving overall scalp health.

### 3. Enhancement of Hair Structure and Pigmentation

Fenugreek contributes to the physical integrity and appearance of the hair shaft through its nutritional profile:

**Strength and Shine:** The presence of proteins and iron in fenugreek oil helps fortify the hair shaft, increasing its tensile strength and imparting a healthy shine [19].

**Prevention of Premature Graying:** Fenugreek oil contains nutrients such as iron and potassium, which are involved in the synthesis of melanin. This activity may help prevent the premature onset of hair graying [46].

### 4. Nutritional Support for Follicular Function

Fenugreek is rich in compounds vital for the hair growth cycle, including vitamins [A and C], minerals [calcium, iron], protein, and folic acid. These nutrients collectively nourish hair follicles, support metabolic processes essential for growth, and provide potent antioxidant and anti-inflammatory actions that help reverse hair damage and reduce hair fall [21].

### Watercress which available and found in Arwa oil for Hair:

*Nasturtium officinale* [watercress] is a nutrient-dense cruciferous vegetable whose composition may offer benefits for scalp and hair vitality. Its potential efficacy is primarily attributed to its high concentration of vitamins, minerals, and antioxidants.

### 1. Mechanism for Promoting Scalp Health and Hair Growth

Watercress is a significant source of Vitamin E, a potent antioxidant. In the context of hair health, Vitamin E is theorized to function by enhancing capillary blood circulation to the scalp. This improved perfusion ensures a robust delivery of oxygen and essential nutrients to the hair follicle cells, supporting their health and metabolic activity, which is a prerequisite for sustained hair growth [33].



Furthermore, its nutrient profile suggests it may act as a natural clarifying agent, helping to remove residue and buildup from the scalp and hair.

## 2. Historical Ethnobotanical Context

The use of watercress in traditional medicine systems is well-documented across various cultures, underscoring its long-standing perception as a therapeutic plant. Historical applications include:

**Ancient Roman and Medieval European Medicine:** Believed to treat mental illness and, when prepared as a steamed infusion, to cure jaundice and fever [26].

**Native American Traditional Medicine:** Used to treat kidney ailments and constipation [28].

**Other Traditional Beliefs:** The plant has been regarded as an aphrodisiac and, in early African American folk medicine, was used as an abortifacient and was believed to cause sterility [34].

These historical uses highlight the plant's perceived potency, though modern scientific validation is required for these specific traditional claims. The contemporary interest in watercress for hair care represents a continuation of its application in wellness practices, now focused on its nutritional and antioxidant properties.

### **Jojoba Oil which available and found in Arwa oil for Hair:**

**Benefits of Jojoba Oil for Hair Loss:** Jojoba oil may help reduce hair loss and enhance its growth and health [28,39]. Removing dirt and accumulated oils from the scalp that can cause follicle blockage, and once opened, this will help nourish hair follicles, leading to the growth of new and healthy hair. Nourishing the hair and promoting its growth due to its richness in a variety of vitamins and minerals, most notably vitamin E, which improves blood circulation in the scalp, helping to stimulate hair growth. Fighting free radicals that damage hair and lead to hair loss, due to its richness in vitamin A, which possesses antioxidant properties that combat free radicals. Moisturizing the hair follicles and thus preventing dryness that may cause hair loss. It is worth noting that the benefits of jojoba oil for strengthening hair or preventing hair loss require further scientific research to confirm these benefits; therefore, it cannot be used in cases of hair issues like hereditary baldness or alopecia [25,28].

### **Benefits of Sesame Oil which available and found in Arwa oil for Hair:**

Sesame oil provides many benefits for hair due to its rich content of various active ingredients that promote hair health. The main benefits of sesame oil for hair include: Stimulating Hair Growth Massaging your scalp with sesame oil helps stimulate hair growth by

supplying hair follicles with the nutrition they need for healthy growth. It also contains essential fatty acids, Vitamin E, phosphorus, and other nutrients that strengthen your hair from within and prevent breakage. Additionally, using sesame oil for hair helps heal any damage caused by chemicals used in treatments or hair coloring. Treatment for Early Graying [21]. Sesame oil has properties that help to darken hair, as it enhances melanin production, thus treating early graying, and turning prematurely gray hair into a darker color. You can massage sesame oil into your scalp and hair. Sesame oil is also used in some hair dyes and cosmetics designed to darken hair, and care should be taken to use sesame oil for hair to maintain its natural color for a long time, thereby ensuring prevention of early graying. Hair Loss Treatment Sesame oil is characterized by its content of omega-3 and omega-6 fatty acids. These essential fatty acids are among the most important nutrients that the body needs in its diet. A study conducted in 2017 indicated that a deficiency in these fatty acids can affect hair health and cause hair loss and thinning. Therefore, using sesame oil to obtain these fatty acids can improve hair growth and treat its loss [28]. Dry Hair treatment Sesame oil is considered a natural moisturizer, so it can help soften hair and make its strands look smoother. Sesame oil contains a range of healthy fatty acids that work to moisturize hair, which is why sesame oil is added to hair care products, such as shampoos and creams. These fatty acids include the following:

Palmitic acid., Linoleic acid., Linolenic acid.

*Nasturtium officinale* [watercress] is a nutrient-dense botanical agent recognized for its diverse phytochemical composition, which may confer multiple benefits for scalp homeostasis and hair follicle function. Its efficacy is attributed to a synergistic combination of vitamins, minerals, and antioxidants.

### **1. Enhancement of Follicular Health and Hair Growth**

The high concentration of Vitamin E in watercress plays a critical role in promoting scalp circulation. By enhancing peripheral blood flow and oxygen delivery to follicular cells, Vitamin E helps maintain cellular vitality and supports the anagen [growth] phase of the hair cycle [42]. This activity is further supplemented by Vitamins A, C, and K, which collectively contribute to a healthy scalp environment, reduce oxidative stress, and support the synthesis of collagen and keratin, essential proteins for hair structure and growth.

### **2. Antimicrobial and Cleansing Properties**

Watercress contains zinc and sulfur, two elements known for their antimicrobial and sebostatic properties. Zinc helps regulate sebum production and mitigates bacterial colonization on the scalp, reducing the risk of folliculitis and infection-related hair loss. Sulfur is a key component of keratin and contributes to hair strength and integrity. Together, these minerals support



thicker, healthier hair growth and help maintain scalp hygiene [30].

### 3. Nutritional Support and Antioxidant Defense

The plant is rich in a broad spectrum of nutrients—including B vitamins [B1, B2, B6], iron, calcium, and iodine—that are essential for metabolic processes within the hair follicle. Its potent antioxidant profile helps neutralize free radicals induced by UV radiation, pollution, and other environmental stressors, thereby reducing oxidative damage to hair shafts and scalp tissue [3].

### 4. Clarifying and Revitalizing Effects

Watercress exhibits natural clarifying properties, helping to remove excess oil, product buildup, and impurities from the scalp and hair. This revitalizing action promotes a clean follicular environment, prevents pore blockage, and improves hair manageability and shine, functioning as an effective natural detoxifier [47].

### Benefits of Onion and Garlic which available and found in Arwa oil for Hair Growth:

Onions are loaded with several hair-nourishing nutrients including potassium, calcium, magnesium, and vitamins C and B6, but the most important of them all is Sulfur is an essential mineral and a fundamental structural component of the human body, with its highest concentrations found in the keratinized tissues of the hair, skin, and nails [50]. The therapeutic application of sulfur-rich plant extracts, notably from *Allium* species such as onion [*Allium cepa*] and garlic [*Allium sativum*], has garnered interest for its potential to mitigate hair loss and stimulate hair growth through multiple mechanistic pathways.

#### 1. Mechanistic Actions of Topical Sulfur

Sulfur is integral to the synthesis of keratin, the primary structural protein of hair. Its proposed mechanisms of action include: Stimulation of Cutaneous Blood Flow: Topical application is suggested to enhance microcirculation in the scalp, thereby improving the delivery of oxygen and nutrients to the hair follicle. Anti-inflammatory Effects: Sulfur compounds can modulate inflammatory responses, potentially alleviating scalp conditions that disrupt the hair growth cycle [8, 9].

Antimicrobial Activity: Sulfur exhibits broad-spectrum antimicrobial properties, which may help maintain scalp homeostasis by reducing microbial load and preventing folliculitis [1, 16].

A deficiency in sulfur is clinically associated with increased hair shedding [telogen effluvium] and reduced hair growth rates.

#### 2. Evidence for Onion [*Allium cepa*] Extract

Crude onion juice, rich in sulfur compounds, has been investigated as a topical treatment for alopecia. A 2002 study reported its efficacy in promoting hair regrowth in patients with alopecia areata, an autoimmune form of hair loss characterized by patchy baldness [16]. A subsequent 2012 study suggested that the sulfur content in onion may contribute to follicular regeneration and activation [17]. It is critical to note that current evidence is derived from limited, small-scale studies, and no large-scale, robust clinical trials support its efficacy for androgenetic alopecia [male- or female-pattern hair loss].

#### 3. Evidence for Garlic [*Allium sativum*] Extract

Garlic essential oil and extracts are similarly replete with sulfur-containing compounds. Beyond the general benefits of sulfur, garlic is a significant source of vitamin C, a potent antioxidant that supports collagen synthesis. Collagen provides amino acid precursors for keratin production, which may contribute to stronger hair shafts and reduced breakage [6, 18]. Some small-scale studies and in vitro models indicate that topical garlic can reduce hair loss and minimize keratin damage [6, 19]. However, as with onion, these findings are preliminary, and the existing literature primarily addresses inflammatory conditions like alopecia areata rather than hormonally-driven androgenetic alopecia.

#### 4. Clinical Considerations and Formulation

The high sulfur content in concentrated *Allium* extracts can be dermally irritating, potentially causing symptoms such as burning, stinging, and scalp dryness due to the stripping of natural oils [1]. To mitigate these adverse effects and improve tolerability, it is standard practice to dilute these active extracts in a carrier oil. Suitable options include:

Coconut oil [*Cocos nucifera*]  
Olive oil [*Olea europaea*]  
Sunflower oil [*Helianthus annuus*]  
Fenugreek oil [*Trigonella foenum-graecum*]  
Peppermint oil [*Mentha × piperita*]  
Arugula oil [*Eruca sativa*]

These carrier oils provide emollient and soothing properties, counterbalancing the potential causticity of sulfur while concurrently hydrating and nourishing the scalp.

#### 5. Conclusion on Efficacy

While the combination of onion and garlic is a popular anecdotal remedy for hair growth, the scientific evidence remains limited. Existing studies, though promising, are characterized by small sample sizes and a focus on specific alopecia subtypes. Substantial, large-scale, randomized controlled trials are necessary to conclusively determine the efficacy and optimal formulation of *Allium*-based topical treatments for common hair loss disorders, particularly androgenetic alopecia. Benefits of using Arwa oil to treat hair loss and split ends and treat head inflammation and its



important and effective oils extracted from the finest herbs and medicinal plants and their microbial medicinal properties. This table illustrates the contents of Orjo oil for hair loss and split ends from natural oils and extracts from beneficial herbs and medicinal plants for hair treatment. Hair growth takes place in a cyclical process that consists of three important phases [46].

Hair follicles are structures in the epidermis that produce new hair. Arteries underneath them provide necessary nutrients to the hair.

1. Anagen [Growing phase]: The anagen phase is the most important phase of the hair growth cycle wherein your hair follicles give rise to new hair shafts. Most of the hair on your scalp is in the growth phase, which can last up to 2–5 years [31].

2. Catagen [Transition phase]: The catagen phase lasts for around 10 days. During this stage, the hair stops growing and the hair follicles shrink in size [32].

3. Telogen [Resting phase]: The telogen phase is known as the “resting phase.” After a 3-month phase, some hair will fall out from the scalp, and then new hair will grow from the same hair follicles [18].

Topical application of garlic oil can help treat skin infections, acne, and fungal issues like athlete's foot. Its antibacterial and antifungal properties kill harmful microbes, while its antioxidants promote skin regeneration and reduce scars. A 2007 study published in the Indian Journal of Dermatology, Venereology and Leprology and performed by dermatological researchers from Iran's Mazandaran University of Medical Sciences found that topical application of 5% garlic gel to areas where hair loss had taken place led to hair regrowth in the previously bald areas of the scalp, reduction in size of bald patches, and higher hair count numbers [41,18].

## CONCLUSION

Through this article, it is clear that: Hair is a very important aspect of one's appearance, and losing it can be very distressing for some people. If you are suffering from any form of hair loss, do not panic. For those experiencing hair loss or scalp issues, Arwa oil hair offer a natural approach worth considering. into your hair care routine through infused oils, It is also clear and there is no doubt that Arwa hair oil has important and therapeutic properties useful for treating hair problems and scalp inflammation because it contains a variety and effective of the best natural oils extracted from some herbs and medicinal plants, Through the unique and distinct composition found in Arwa oil to treat hair loss and split ends as it contains on a group of the best and strongest natural oils extracted from medicinal plants useful for the human body, which gives hair the final solution to all hair problems and among the types of those oils that Arwa oil contains are

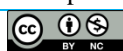
olive oil, peppermint oil, watercress oil, garlic oil, onion oil, fenugreek oil and clove oil all this oils become in one product Arwa oil hair . With its high content of vitamins and minerals, Arwa oil hair provides many benefits to the hair and scalp. Whether you use it as a serum, mask, or shampoo, make sure to choose quality and organic Arwa oil hair to get the best results. With its versatility and nourishing properties, Arwa oil hair is the ideal choice to enhance and protect your hair. Finally, Arwa oil hair is an essential ingredient for any hair care routine. From protecting against breakage to adding shine and smoothness, the oil from the Arwa oil hair is an ideal choice for nourishing and restoring hair, For strong, attractive healthy hair, shinier and more vital, and treatment of hair loss and brittle problems, scalp infections and slow hair growth. So Arwa oil hair can be extremely beneficial for people suffering from hair loss. They help reduce hair loss, induce hair growth, and improve scalp health.

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