

**HERBAL HAIR OIL: AN INSIGHT INTO PHARMACO-ECONOMICS****Sakshi, Sarika, Nishta Chauhan, Deepak Prashar\*, Vijay Prakash**

**Abstract:** Hair oil is regarded as one of the key stimulants for promoting the growth and nourishment of scalp hair. Choosing the right hair oil for optimal results is essential. Currently, the market is saturated with a vast array of hair oils, each making various claims. Nevertheless, it is challenging to concentrate on single hair oil, considering the significance of hair in shaping social values. However, certain parameters such as benefits, availability, and cost-effectiveness are taken into account when selecting hair oil. This review focuses on the availability and Pharmacoeconomical aspects of hair oils.

**Keywords:** Hair oil, Economical, Hair growth, Availability, Nourishment

**Introduction:** Hair oils are essential products for hair care<sup>1</sup>. These products are defined as formulations primarily used for cleansing, nourishing, reducing dryness, and maintaining the healthy appearance of hair. Hair oils are preparations applied to the hair to treat disorders such as hair fall, dryness, and graying, while also providing nourishment. In today's market, where chemical-based hair oils are prevalent, herbal hair oil presents a refreshing alternative. Enriched with the benefits of natural herbs and oils, herbal hair oil nourishes, protects, and encourages hair growth. With its numerous advantages and natural components, herbal hair oil is an excellent option for those seeking a chemical-free and effective hair care

solution. This approach to hair care is natural and holistic, utilizing the power of herbs and plants to nourish, protect, and foster healthy hair growth. Herbal hair oil can be tailored to meet individual hair types and needs. Various herbs and oils can be combined to create a unique formula that addresses specific concerns, such as dryness, dandruff, or hair loss<sup>2-5</sup>. This personalized method of hair care empowers individuals to take charge of their hair health and achieve their desired results. Herbal hair oil has proven to be a suitable choice for those with sensitive scalps or skin allergies. The demand for herbal hair oil is increasing, as it is utilized in various hair treatments. In the recent past the research criteria has been focused on herbs based products<sup>6-11</sup>. Herbal hair oil provides essential nutrients that are crucial for maintaining the normal function of the sebaceous glands and promoting hair growth. The use of hair oil is on the rise, in line with the improvement in people's living standards. Nowadays, hair care beauty is enhanced with herbs, which are increasingly recognized compared to synthetic alternatives.

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**Table 1 Different Categories of Herbal Hair Oil<sup>12-13</sup>**

S. No.	Categories	Uses
1.	Hair Growth Oil	<ul style="list-style-type: none"> <li>• Stimulates hair follicles.</li> <li>• Promotes blood circulation in the scalp.</li> <li>• Encourages healthy hair growth.</li> </ul>
2.	Anti-Dandruff Oil	<ul style="list-style-type: none"> <li>• Combats dandruff.</li> <li>• Soothes an itchy scalp.</li> <li>• Treats scalp infections.</li> </ul>
3.	Hair Strengthening Oil	<ul style="list-style-type: none"> <li>• Strengthens hair strands.</li> <li>• Reduces breakage.</li> <li>• Prevents spilt ends.</li> </ul>
4.	Hair Conditioning Oil	<ul style="list-style-type: none"> <li>• Nourishes and moisturizes hair deeply.</li> <li>• Leaves hair soft, smooth, and manageable</li> </ul>
5.	Scalp Treatment Oil	<ul style="list-style-type: none"> <li>• Treats scalp conditions like dryness and inflammation.</li> <li>• Soothes scalp irritation.</li> <li>• Helps maintain scalp health</li> </ul>
6.	Preventive Hair Care Oil	<ul style="list-style-type: none"> <li>• Maintains overall hair health.</li> <li>• Prevents hair fall and premature greying.</li> <li>• Protects hair from damages</li> </ul>
7.	Hair Thickening Oil	<ul style="list-style-type: none"> <li>• Adds volume and thickness to thin or fine hair.</li> <li>• Improves hair density.</li> </ul>

Apart from the different categories of the herbal oil available in the market there are numerous herbs which are being explored in the recent times for the formulation of hair oils. Some of the herbs that are being employed in daily routine in the form of

spices or food supplements too, possess the anti-hair fall or hair nourishing properties. These herbs act by the different mechanism and contain different chemical constituents which are being used for its activity in hair conditioning.

**Table 2 Various Herbs Employed for Hair Nourishment and Growth<sup>14-19</sup>**

S.N O	HERBS	SCIENTIFIC NAME	FAMILY	M.O.A
1.	Bhringraj	<i>Eclipta prostrata</i>	Asteraceae	It inhibits 5Alpha reductase which converts testosterone to DTH.
2.	Amla	<i>Phyllanthus embica</i>	Phyllanthaceae	Amla is a potent inhibitor of 5-alpha reductase, an enzyme linked to hair loss.
3.	Hibiscus	<i>Rosa sinensis</i>	Malvaceae	The amino acids in hibiscus promote the production of keratin, the main structural protein in hair, which strengthens and encourages growth.
4.	Coconut oil	<i>Cocos nucifera</i>	Arecaceae	It reduces the production of pro inflammatory Cytokines like TNF Alpha and IL-6, inhibit inducible nitric oxide synthase (iNOS), COX 2
5.	Neem	<i>Azadirachta indica</i>	Meliaceae	It contains compounds like azadirachtin, which disrupts insect feeding, growth, and reproduction, and also acts as a repellent.
6.	Onion	<i>Allium cepa</i>	Amaryllidaceae	Onion oil contains sulfur, which is crucial for the formation of keratin. Since keratin is the building block of hair, the

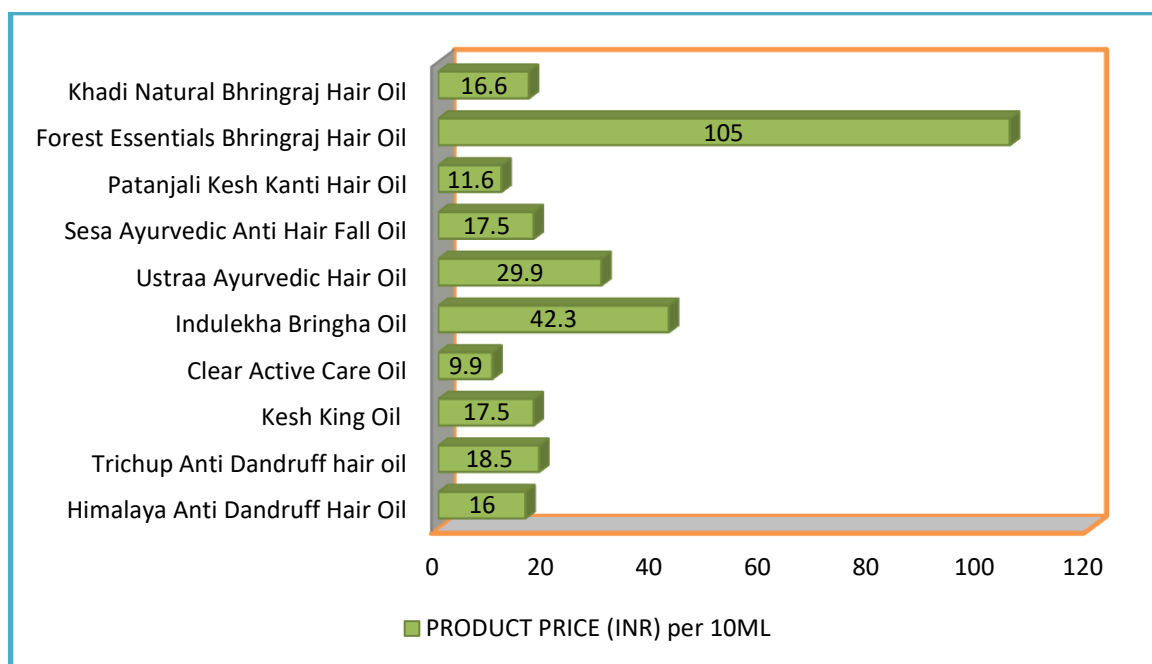
				increased sulfur content from the oil helps strengthen hair follicles and promote healthy hair growth.
7.	Aloe vera	<i>Aloe vera</i>	Liliaceae	Gently cleansing the scalp with proteolytic enzymes that break down dead skin cells, promoting hair growth and clearing clogged follicles.
8.	Shikakai	<i>Senegalia rugata</i>	Fabaceae	It inhibits pro inflammatory enzyme like COX and LOX, and its inherent anti-bacterial property
9.	Tulsi	<i>Ocimum tenuiflorum</i>	Lamiaceae	Eugenol and other compounds in Tulsi may help control scalp infections and dandruff-causing microbes.
10.	Shatavari	<i>Asparagus racemosus</i>	Asparagales	Shatavari might enhance blood flow to the scalp, promoting hair growth.
11.	Brahmi	<i>Bacopa monnieri</i>	Plantaginaceae	Bacopa and Bacoside A inhibit the release of TNF Alpha and IL-6
12.	Vetiver	<i>Chrysopogon zizanioides</i>	Poaceae	It increases anti-inflammatory Cytokines like IL-6 and TNF Alpha
13.	Henna	<i>Lawsonia inermis</i>	Lythraceae	Henna's lawsone binds to keratin in hair, creating a reddish-brown colour.
14.	Liquorice	<i>Glycyrrhiza glabra</i>	Fabaceae	Liquorice may regulate cytokine production, reducing inflammation.it Inhibits inflammatory enzymes, reducing inflammation
15.	Jatamansi	<i>Nardostachys jatamansi</i>	Caprifoliaceae	Jatamansi may regulate GABA (inhibitory neurotransmitter) activity, promoting relaxation. Jatamansi's adaptogenic properties might help reduce anxiety and stress.
16.	Moringa	<i>Moringa oleifera</i>	Moringaceae	Moringa might enhance blood flow to the scalp, promoting hair growth.
17.	Jasmine	<i>Jasminum officinale</i>	Oleaceae	Jasmine's fragrance interacts with the brain's limbic system, influencing emotions and mood.
18.	Fenugreek	<i>Trigonella foenum-graecum</i>	Fabaceae	Fenugreek's anti-inflammatory properties might soothe the scalp.
19.	Curry leaves	<i>Murraya koenigii</i>	Rutaceae	Curry leaves antioxidants neutralize free radicals, reducing oxidative stress.
20.	Almond oil	<i>Prunus dulcis</i>	Rosaceae	Almond oil contains vitamin E, which promotes hair growth. Almond oil's fatty acids nourish and moisturize hair follicles.
21.	Til oil	<i>S. indicum</i>	Pedaliaceae	It inhibits COX and LOX.
22.	Castor oil	<i>Ricinus communis L.</i>	Euphorbiaceae	Castor oil's ricinoleic acid might increase blood flow to the scalp.
23.	Arnica	<i>Arnica montana</i>	Asteraceae	Sesquiterpenes in arnica might reduce inflammation, promoting healthy hair growth.
24.	Bargad	<i>Ficus racemosa</i>	Moraceae	Wedelolactone in bargad might promote hair. Wedelolactone's antioxidant properties may help protect hair follicles.

25.	Birch	<i>Betula pendula</i>	Betulaceae	Botulin might help control scalp infections and helps to reduce inflammation.
26.	Burdock root	<i>Arctium lappa</i>	Asteraceae	Insulin might support scalp health by promoting beneficial microorganisms.
27.	Mustard	<i>Barssica spp.</i>	Brassicaceae	Allyl isothiocyanate might help to control scalp infection and presence of Omega-3 fatty acid may nourishes hair follicles.
28.	Rosemary	<i>Rosmarinus officinalis L.</i>	Lamiaceae	Rosemary oil can inhibit 5-alpha reductase, which help to reduce hair loss.
29.	Nutgrass	<i>Cyperus rotundus</i>	Cyperaceae	It modulates the expression of pro inflammatory Cytokines like IL-4, IL-6 and IFN GAMMA.
30.	Tea	<i>Camellia sinensis</i>	Theaceae	Caffeine in tea leaves which stimulate hair follicle activity by blocking the effect of DTH (dihydrotestosterone) and improve blood circulation in the scalp.

### Economical Prospective of Hair Oils<sup>20</sup>

Many hair oils in India are regarded as cost-effective and provide outstanding value. The most well-known choices include Parachute Coconut Oil, Bajaj Almond Drops Hair Oil, and Dabur Amla Hair Oil. The Indian hair care sector, which encompasses ingredient-based hair oils, has experienced significant growth in recent years. The size of the market has notably increased, propelled by factors such as growing disposable incomes, urbanization, and a heightened emphasis on personal grooming

and self-care. In 2021, the size of the India haircare market was valued at INR 350.2 billion (USD 4,737.6 million) and is projected to achieve a compound annual growth rate (CAGR) of over 6% from 2021 to 2026. Consequently, the total anticipated value of the skincare sector by 2026 is projected to be around INR 496.74 billion (5.99 billion USD). This indicates that the industry is expected to experience an overall percentage growth of 41.84% over the forthcoming six years.



**Figure 1 Represent the Economics of Commercial Available Hair Oils**

The primary cities in the Indian haircare market include Mumbai, Kolkata, Delhi, Bangalore, Chennai, and Pune, among others. In 2021, Mumbai was identified as the largest haircare market in India, followed closely by Delhi. The growth of the market is evident in the increasing range of products available, as manufacturers are launching innovative formulations and packaging to meet the varied needs and preferences of consumers. Additionally, the rise of e-commerce platforms has significantly contributed to reaching a wider consumer audience, particularly in remote regions.

**Conclusion:** Under current circumstances, hair is regarded as a significant parameter of personality. The global market is saturated with hair oils that make various claims regarding hair treatment and management. Recently, herbal hair oils have gained substantial market traction, prompting numerous online platforms to offer consultations on hair care. All these factors related to hair care are, in one way or another, directly or indirectly influenced by economic considerations. Consequently, a pharmacoeconomic review is deemed essential for maintaining healthy hair.

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