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# CONDITIONING OIL ENRICHED WITH MILK PROTEINS

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## ABSTRACT

Many your time it happens that shampoo or a conditional oil is labelled as being a natural but when you scroll through the list of ingredients then you see the most of the ingredients are chemicals so as compared to using chemical conditioner oils we can use a herbal conditioner oil which have the ingredients like coconut oil saffron cow milk and has it compared to the chemical conditional oils it gives us more beneficiary effects to the Harris scalpes and also to make the hairs free from split ends. Coconut oil we can use a key ingredient which gives the property Coconut oil is safe solution for preventing dryness and flaking of skin. acts as effective moisturizer on all types of skin, including dry skin. The benefit of coconut oil on the skin is comparable to that of mineral oil. We can also use a second ingredient which is Saffron … When used for hair care, Saffron's antioxidant properties prevent hair loss, purify the scalp and pores, promotes healthy hair growth, and repairs damaged hair. It is no wonder Saffron is the most expensive spice globally and worth more than its weight in gold. And the last ingredient we use to nourish the hairs is raw cow milk …. Milk is a popular traditional hair care remedy used to soften and condition hair. But the benefits of milk for hair don't end there. It is also said to reduce split ends and manage dryness. Milk may also curb frizz, smoothen hair, and improve hair texture. While there is no scientific evidence to prove the efficacy of topical application of milk for the hair, anecdotal evidence claims that it conditions the hair and restores its natural shine…. As compare to the chemical ingredients v can muchly prefer to the herbal ingredients and a product because it gives a effect and result in long period of time but it have the less side effects as compare to the chemical constituents.

**KEYWORDS:** Conditioning oil, keratin, cow milk, saffron, coconut oil.

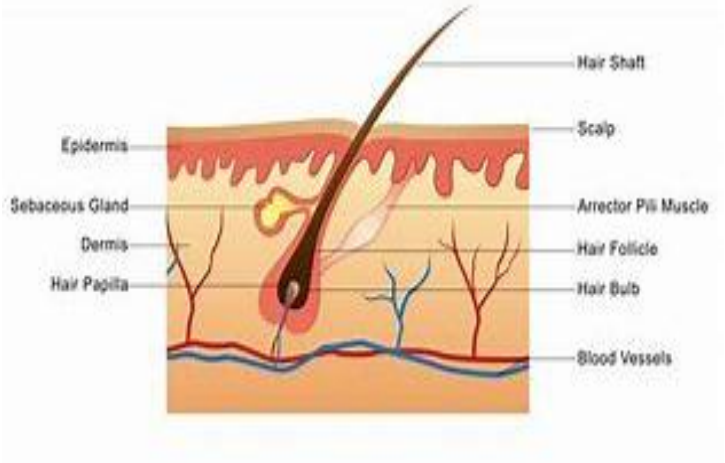
## INTRODUCTION

### ❑ Hair Structure

Hair is simple in structure made of the root and shaft. The root is enclosed in the hair follicle, submerges into the skin in inclination and ends down to the bulb; while hair shaft is the part of the hair seen above the skin. Hair is made up of tough protein called keratin that decides the strength of hair. Hair structure is made up of different layers and structures.

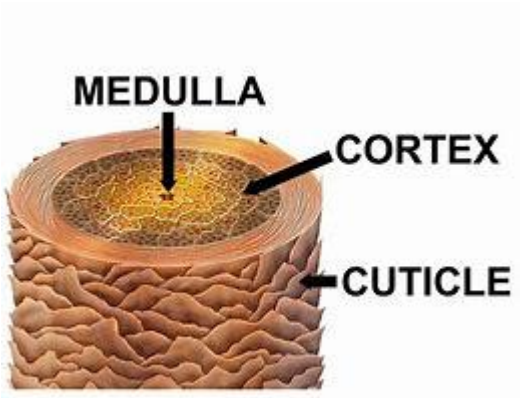
Usually hair consists of two parts: (a) Follicle; (b) Shaft.

The hair follicle is the centre of the biological activity like hair growth, pigmentation; whereas the hair shaft is considered to be dead and is mainly made of protein.




The hair follicle is the point from which the hair grows. It is a club-shaped structure in the skin. At the end of the follicle is a network of blood vessels that supply nutrients to feed the hair and help it grow. This is called the papilla. Surrounding the papilla is a bulb. The hair bulb forms the base of the hair follicle. In the hair bulb living cells divide and grow to build the hair shaft. Blood vessels nourish the cells in the hair bulb and deliver hormones that modify hair growth and structure at different times of life. Adjacent to the hair follicles are glands. The most important one of these glands is the sebaceous gland, which secretes oil that helps to keep the hair conditioned, is associated with the bulb. The hair bulb has special cells known as melanocytes which produce the pigment called melanin. This melanin gives hair its colour. Within the skin, internal and external root sheaths cover the hair follicles. The outer rooting of a hair follicle has a continuous growth cycle along with the epidermis.

The part of the hair seen above the skin is called the hair shaft. The hair shaft is made up of dead cells that turn into protein called keratin and binding material, together with small amounts of water. Keratin makes hair both strong and flexible. Like all proteins, keratin is made up of a chain of amino acids that forms a helical, or spiral, shape. These helices are connected by strong bonds between amino acids. These bonds make hair strong.




The hair shaft is formed of three layers:

**(1) The medulla:** It is the deepest layer of the hair shaft, only seen in large and thick hairs. It is a honeycomb like keratin structure with air spaces inside (ii) The cortex: It is the middle layer of the hair shaft which provides the strength, colour and texture of a hair fibre. The cortex is made from tiny fibers of keratin running parallel to each other along the length of the hair shaft. The hair cortex also contains melanin which is made by specialised cells named melanocytes. Melanocytes, which are situated near the hair bulb, inject melanin into keratinocytes of the new hair shaft. The colour lasts during the hair cycle, from the genesis to the end, when the hair falls.

**(2) The cortex:** It is the middle layer of the hair shaft which provides the strength , colour, texture of hair fibre. The cortex is made fromtiny fibres of keratin running parallel to each other along the length of the hair shaft.

**(3) The cuticle:** It is the outer layer of the hair shaft which is thin and colourless. It serves as protection to the cortex. It is made up of 6 to 11 layers of overlapping semi-transparent keratin scales (which make the hair waterproof and allow it to be stretched). Thick, coarse hair have more overlapping layers of cuticles than fine hair.

❑ **Ingredients**

**1. Coconut Oil**

❖ Medicinal Benefits of Coconut Oil

➢ Skin Care

Coconut oil is an excellent massage oil for the skin as well. It acts as as effective moisturizer on all types of skin, including dry skin. The benefit of coconut oil on the skin is comparable to that of mineral oil. Fortunately, unlike mineral oil, there is no chance of having any adverse side effects on the skin from the application of coconut oil. Coconut oil is safe solution for preventing dryness and flaking of skin. It also delays the apperance of wrinkles and sagging of skin which narmally accompany aging. Coconut oil also helps in treating various skin problems including psoriasis, dermatitis, eczema and other skin infection. For that exact reason, coconut oil forms the base ingrediants of various body care products like soaps, lotions and creams that ars used for skin care. Coconut oil also helps in preventing premature aging and degenerative disease due to its well-known antioxident properties.

➢ Hair Care

Coconut oil is one of the best natural nutrients for hair. It helps in healthy growth of hair a shiny quality. It is also highly effective in reducing protein loss which can lead to various unattractive or un healthy growth qualities in your hair. Coconut oil is extensively used in the Indian sub-continent for hair care. Most of the people in those countries apply coconut oil on their hair every day after bathing or showering. It is an excellent conditionarand helps the re-growth process of damageed hair. It also provides the essential proteins required for nourishing and healing damaged hair. Research studies indicate that coconut oil provides better protection to hair from damage caused by hygral fatigue.

➢ Infection

Coconut oil is very effective against a variety of infections due to its antifungal, antiviral and anti-bacterial properties. According to the Coconut Research Center, coconut oil kills the viruses that cause influenza, measles, hepatitis, herpes, SARS and other serious health risks. It also kills bacteria that cause ulcers, throat infections, urinary tract infections, pneumonia and gonorrhea, finally coconut oil is also effective in the elimination of fungi and yeasts that cause ringworm, athlete's foot, thrush and diaper rash.

➢ OTHER BENEFITS

Coconut oil is strongly recommended for a number of other benefits.

- Liver

The presence of medium chain triglycerides and fatty acids helps in preventing liver diseases because those substances are easily converted into energy when they reach the liver, thus reducing the work load of the liver and also preventing accumulation of fat.

- Stress relief

Coconut oil is very soothing and hence it helps in removing stress. Applying coconut oil to the scalp, followed by gentle massage helps to eliminate mental fatigue.

- Bones

As mentioned earlier coconut oil improves the ability of our body to absorb important minerals. These include calcium and magnesium which are necessary for the development of bones. Thus, coconut oil is very useful to women who are prone to osteoporosis after middle age.

❖ Extraction Of Coconut Oil

Coconut oil is produced by crushing *coccus nucifera*, the dried kernel, which contains about 60-65% of the oil. The oil has the natural sweet taste of coconut and contains 92% of saturated fatty acids (in the form of triglycerides), most of them (about 70%) are lower chain saturated fatty acids known as medium chain fatty acids (MCFAs). MCFAs are not common to different vegetable oils with lauric acid at 45-56%. Various fractions of coconut oil have medium chain triglycerides and are excellent solvent for flavours, essences, emulsifiers etc. These fatty acids are used in the preparation of emulsifiers, as drugs and also in cosmetics. Its metabolism is different from that of the normal vegetable oils containing long chain fatty acids. Hence, it cannot be generalized as an oil similar in properties to that of a 92% long

chain saturated fatty acids containing oil/fat. More studies are required to prove the good effects of coconut oil, medium chain triglycerides (MCT) and the fatty acids on humans especially on the ill effects on cardiovascular and other diseases. The review covers the production of coconut oil, its chemistry, MCT and its applications taking a holistic approach on the good and bad effects of coconut oil reported in the literature.

❖ Uses Of Coconut Oil

- Deep condition

Hair conditioners often contain coconut oil because it easily penetrates the strands and can even prevent protein loss. “I use coconut oil for hair and on my skin for deep conditioning,” says Tasneem Bhatia, M.D., an integrative medicine physician and owner of CentreSpringMD in Atlanta, GA. Apply a quarter-sized dollop to your hair, comb it, and then pile it into a loose bun. You’ll want to place a soft towel over your pillow or sleep in a shower cap. In the morning, rinse with a gentle shampoo.

- **Minimize dandruff**

Coconut oil can help lower the levels of yeast on the skin that drive inflammation, flaking, and itching associated with dandruff, says Dr. Zeichner. Try minimizing the problem with an ultra-moisturizing coconut oil treatment: Heat 2 or 3 tablespoons of oil on the stove over a low flame. Once it liquifies, immediately remove it from the stove, so it doesn’t become too hot. Then, massage the oil into your scalp. If you have any leftover oil, you can use it to coat the rest of your hair. Let the oil sit on your scalp for 30 minutes and then wash it out with shampoo. (A shower cap will contain the mixture and prevent it from dripping on you while you wait.)

- Remove eye makeup

Yes, coconut oil even works on waterproof mascara! Put a little on a cotton ball and gently sweep it over your eyes, paying attention to your under-eyes as well. The oil does a great job breaking down waxy, inky eye makeup, and leaves the delicate area hydrated, too. Once you’re done, wash your face as usual.

- Treat your feet

Athlete’s foot is a common fungal infection that’s triggered by sweaty feet. Coconut oil may help soothe the infection and flaking skin. After you apply athlete’s foot treatment, top it with

a layer of organic coconut oil and cover with cotton socks. This works wonders for cracked heels, too.

- Nourish dry cuticles

Massaging coconut oil into your cuticles and the skin around your nails can bring some much-needed moisture to an often overlooked part of the body. The benefit? You'll fend off cracked skin, hydrate brittle nails, and prevent hang nails.

- Hydrate dry hands

Coconut oil can work wonders on dry, itchy skin. "I keep a jar of organic extra virgin coconut oil by the kitchen sink and put a little on after washing my hands to keep them soft and moist," says Dr. Low Dog. (This won't work on the go, so make sure you keep one of these hand creams for dry skin in your bag, too.) And if you cook with coconut oil—you can sub it for butter in baking recipes because it's solid at room temperature—scoop out a little extra for your hands, too.

- Soothe eczema

Coconut oil can also be used as a natural treatment option for those with eczema, a cluster of skin issues that lead to red, itchy, swollen patches of skin. One small study found that eczema patients (specifically those suffering from atopic dermatitis) who applied virgin coconut oil to the skin twice a day experienced a reduction in staph bacteria on the skin, dryness, abrasions, redness, and thickening of the skin due to scratching. Apply a light layer of virgin coconut oil to the affected area twice a day to help soothe eczema.

❖ Other benefits of coconut oil for hair

Coconut oil may also have other benefits for your hair. However, many of them haven't been examined in properly controlled studies.

✓ Possible benefits include:

- Lice prevention

One small study found that when combined with anise in a spray, coconut oil was 40% more effective at treating head lice than the chemical permethrin.

- Sun protection

UV filters can help protect your hair from sun damage. Some in vitro and skin studies have found coconut oil to have a sun protection factor of 8, so putting it on your hair could be useful.

- Dandruff treatment

Dandruff can be caused by an overgrowth of fungus or yeast on the scalp. While no studies have examined coconut oil specifically, it has antimicrobial properties and could be useful for treating dandruff.

- Hair loss prevention

Excessive grooming can damage the hair shaft, which in extreme circumstances can cause hair loss. Coconut oil can help keep your hair in good condition and prevent this.

**Why coconut oil is better at protecting your hair than other oils ???**

- ✓ Coconut oil is often said to be the best oil to use on your hair to reduce protein loss and keep it looking healthy.
- ✓ Given the current popularity of coconut oil, this would be easy to dismiss as a trend.
- ✓ However, there is some evidence behind this claim.
- ✓ One older study published in 2003 examined the effects of applying coconut, sunflower, or mineral oil to hair before or after washing.
- ✓ To see which oil was best for protecting hair health, the researchers measured the amount of protein the hair lost after each of these treatments.
- ✓ They found that coconut oil was better at preventing protein loss than both the mineral and sunflower oils when applied either before or after the hair was washed.
- ✓ In fact, coconut oil came out on top in all of their studies and reduced protein loss in hair that was undamaged, bleached, chemically treated, and UV exposed.
- ✓ On the other hand, both the mineral and sunflower oils did not have this effect and weren't found to be effective at reducing protein loss from hair.

**How to use coconut oil for beautiful hair???**

Here are a few ways to use coconut oil to help improve the health of your hair:

- As a conditioner

Shampoo your hair as normal and then comb coconut oil through your hair, from the midsection to the ends.

- As a post-wash detangler

After shampooing and conditioning your hair, rub a little coconut oil through your hair to protect it while you brush it.

- As a hair mask

Rub coconut oil through your hair and let it sit for a few hours (or even overnight) before washing it out.

- As a pre-wash hair protector

Rub coconut oil through your hair before you wash it.

- As a scalp treatment

Before bed, massage a small amount of coconut oil into your scalp. Leave it overnight and wash it off with shampoo in the morning.

**Does coconut oil have any negative effects on hair ???**

- Coconut oil is generally considered safe to apply to your skin and hair (13Trusted Source).
- However, using too much could cause a buildup of oil on your hair and scalp.
- This could make your hair greasy and dull, especially if you have very fine hair.
- To avoid this, make sure you start with only a small amount and begin by rubbing the coconut oil through your hair, from the midsection to the ends. People with very fine hair may want to avoid putting coconut oil on their scalp altogether.

**2. Cow milk**

Cow's Milk is an age-old ingredient which is often used to naturally cleanse, moisturize and nourish the skin. Most of the skin care products use Cow's Milk, as it contains lactic acid which acts as a natural cleanser and gentle exfoliator for the skin. It also helps in removal of dead skin cells, by stimulating new cell generation for fresh and tightened skin cells. Loaded with Vitamin A & D, Cow's Milk enhances the skin's natural complexion for a radiant glow. Vitamin A helps in treating dry and flaky skin, while Vitamin D stimulates collagen production, which further tightens and firms the skin. Together, Vitamin D and Calcium, present in Cow's Milk or raw milk, benefits to improve the skin's elasticity, while it deeply nourishes the skin.

Milk contains proteins such as casein and whey that help strengthen and thicken hair. It is a rich source of calcium that promotes hair growth and prevents hair loss. Milk contains Vitamin D that helps in the growth of new hair follicles.

Milk is considered a natural straightening ingredient. It contains casein and whey protein, which not only smoothen your hair but also naturally straighten them. Milk can also be used to repair your damaged hair.

Milk is one of the most used ingredients in many foods and is often among the healthiest additions.

➢ Uses

- For Healthy Hair Growth: The proteins of milk can help you to flaunt shinier and healthier hair. The proteins of milk i.e casein and whey helps the individual in healthier hair growth. Milk proteins play an important role in making hair thicker and healthier. If there is a calcium imbalance it can definitely have an impact on the growth of healthy hair. Calcium from milk accelerates hair growth and prevents hair loss, proteins and lipids make hair roots stronger; whereas vitamins A, B6, biotin and potassium make your hair shiny, healthy and beautiful.Keratin is also an important element for hair growth; calcium is necessary in order to create keratin, and milk is full of calcium. Drinking a cup of milk daily may help dull and dry hair become healthier and thicker.
- Keratin is supplied to the Hair: The production of keratin is one of the primary health benefits of milk protein. Desi cow milk can help you enhance the production of keratin, a protein that is essential for healthy hair growth
- Cleanses Your Skin

Whole milk is a reservoir of soluble whey proteins. A few of them, like lactoferrin, have potent anti-inflammatory activity. Topical application of fermented milk that is rich in lactoferrin can cure inflammatory conditions like acne vulgaris.

- Drinking low-fat skim milk can also prevent and effectively manage acne, psoriasis, pathogenic skin infections, lesions, and breakouts. This is because skim milk has negligible fat and triglyceride content. In one study, milk application reduced skin sebum content on the skin by 31%.[5]

| Cow milk component | Approximate percentage (%) |
|---|---|
| Water | 86.5 |
| Milk sugar (lactose) | 4.8 |
| Fat | 4.5 |
| Proteins | 3.5 |
| Vitamins and minerals | 0.7 |

**Can we apply milk on oily hair ???**

Milk is rich in fat which may make your oily hair look more greasy. You will have to shampoo well afterwards if you apply milk on your hair.

➢ Extraction

In the process of extracting oil from milk, subjecting cream to agitation to secure agglomeration of the fat particles, and admixing therewith water at a temperature between 160 and 212 F to substantially liquefy said particles and in amount to eifect the rising of such fat in an oily layer.

➢ Proteins in Cow's milk

Milk naturally contains the large amount of protein needed for her calf. That amount of protein is not only unnecessary but unhealthy for humans. Excess protein in our diets causes calcium to leach out of our bones. This can be a cause of osteoporosis. Studies have also shown that there are certain proteins in cow's milk which acts as allergen particularly to breast fed infants. These allergens cause hypersensitivity reactions, lymphadenopathy and hepato-splenomegaly. Studies have revealed that more than 100 distinct antigens are released

by digestion of cows' milk which stimulates humoral responses and formation of different antibodies. The common problems in children are GIT disorders, acute gastrointestinal blood loss, milk borne infections, lack of minerals, abdominal pain, bedwetting, asthma, intestinal bleeding, colic and diabetes.[7] Adults can be affected with coronary deaths, hardened and narrowed arteries, kidney disorders, arthritis and the animal body through contaminated water and feed. After circulating in the blood they finally deposits in the adipose tissues of the body as lipid rich tissues are good for their chemical stability and persistence. From there they are finally secreted as toxins in the milk.[4] B-HCH is one of the main contaminants followed by pp'-DDT and pp'-DDE. A level of PCB several times higher is noted in cow's milk. Along with this milk from infected cows may contain pus and blood. Milk also gets contaminated during milking with dirty hands of milkers and faecal material from the tail and perineum leading to heavy bacterial contaminations.[5] Salmonella, E. coli, and Staphylococcus infections can be traced easily in milk. After milking the milk is kept for long time before being distributed and utilized by consumers. At this room temperature the number of bacteria in milk multiply rapidly, increase in number and the milk quickly rottens. Few of them even survive pasteurization. Example being the Mycobacterium paratuberculosis avium (etiological agent for Johne's diseases in animals) can cause Crohon's disease in humans (needs further study for its establishment) and Mycobacterium tuberculosis which cause tuberculosis in humans. Other than bacteria, Prions, an infectious protein without any genetic apparatus which is very similar to virus and responsible for bovine spongiform encephalopathy (BSE) and result in Mad cow disease[6] have also been traced in milk. Several farmers have developed a fatal disease syndrome that resembles both BSE and CJD (Creutzfeldt-Jakob-Disease). The immuno-deficiency virus seen in cattle is closely related in structure to that of the human AIDS virus. Other than this few infected cow milk is also a source of bovine leukemia virus which causes blood cancers in individuals consuming this. Proteins in Milk Cow's milk naturally contains the large amount of protein needed for her calf. That amount of protein is not only unnecessary but unhealthy for humans. Excess protein in our diets causes calcium to leach out of our bones. This can be a cause of osteoporosis. Studies have also shown that there are certain proteins in cow's milk which acts as allergen particularly to breast fed infants. These allergens cause hypersensitivity reactions, lymphadenopathy and hepato-splenomegaly. Studies have revealed that more than 100 distinct antigens are released by digestion of cows' milk which stimulates humoral responses and formation of different antibodies. The common problems in children are GIT disorders, acute gastrointestinal blood loss, milk borne infections, lack of minerals, abdominal pain,

bedwetting, asthma, intestinal bleeding, colic and diabetes. Adults can be affected with coronary deaths, hardened and narrowed arteries, kidney disorders, arthritis and more serious question of leukaemia lymphoma and cancer of different organ particulary genital organs .some specific protein in milk May be responsible for insulin dependant diabetes which usually begins in childhood .it is probably because the cows milk protein stimulate the production of antibiotics which can destroy the beta cell of pancrease.when 80% to 90% insulin producing beta cell are destroy manifastation of diabetes start .the number of cases is also influenced by genetic predisposition.

**3. Saffron**

- Saffron scientific name-Crocus sativus L
- Family -( Iridaceae),
- Common Names: Kesar, meadow crocus, saffron.
- Chemical constituents : Crocin, crocetin, and safranal are the main chemical constituents of saffron.
- Taste: The bitter taste of saffron is attributed to picrocrocin.
- Colour: Fresh saffron of good quality is when the upper part of its stigma should be whitish in colour and without fungal infestation. It should neither be too compact and thick nor crumbling and it should not easily impart its colour on touch. The colour of saffron is due to the presence of crocins, which have glycoside carotenoid structure.
- Aroma: Saffron is an aromatic aldehyde which is the main component of plant volatile oil.
- Storage: Keep it in a warm dark place, away from sunlight.
- Actions:

Saffron is Qabez – astringent, Mohallel – resolvent and Munzij –concoctive. It is moderately hot and deobstruent. According to Galen its heat is more than its astringence. Its oil is warming. It reverses putrefactive processes and strengthens the viscera.

- Traditional use of saffron

Traditionally, saffron has been used in herbal products, in ayurvedic drugs, and for in-home treatment of certain disorders. It is used as an aphrodisiac, stimulant, anti-poison, livotonic, lactogogue, nervine tonic, cardiac tonic, carminative, immune stimulator, diaphoretic, diuretic, sedative, emmenagogue, relaxant, febrifuge, anti-stress, and anti-anxiety remedy. Therefore, it can be used for a variety of diseases and conditions like general debility, alcoholism, inflammation, diabetes, and children's disorders of unknown etiology, insect bites and stings, and edema. Saffron has also shown beneficial effects against skin diseases, measles, smallpox, scarlet fever, respiratory issues, and gastrointestinal disorders (Mousavi and Bathaie 2011). Saffron and its metabolites show a significant anticancer effect against the breast, lung, pancreatic, and leukemic cancer cells in different in vivo and in vitro models.

- Pharmacological Study of Saffron

Since ancient times, plants have been used in every civilization, worldwide, as a source of traditional medicine. For more than 3000 years, saffron has been considered a panacea, according to Ayurvedic, Mongolian, Chinese, Egyptian, Greek and Arabic medicines. Some therapeutic properties attributed to saffron are listed below.

**1. Antidepressant**

The use of saffron as an antidepressant has a long tradition, ranging from antiquity to modern times. Depression is one of the five most prevalent diseases worldwide. It affects about 11.6% of the world's population. It is predicted that by 2020 this will be the second leading cause of overall disability. Similar to standard antidepressants, saffron can exert its antidepressant effect by modulating the level of certain chemicals in the brain, including serotonin. Serotonin, or 5-hydroxytryptamine, is a mood-elevating neurotransmitter synthesized from tryptophan. Although not appearing as a medicinal herb used traditionally, crocus petals are significantly less expensive than stigmas, prompting researchers to examine their potential in treating depression. Thus, a trial comparing the efficacy of petals and stigmas suggests that they are equally effective in the treatment of mild to moderate depression.

**2. Treating Sexual Dysfunction**

Saffron, as well as other spices, have always enjoyed a reputation as an aphrodisiac in different Egyptian, Greek, Roman and other civilizations. Traditionally, Muslims, Phoenicians and Chinese use saffron as a sexual stimulant. The aphrodisiac activities of the aqueous extract of stigmas of C. sativus and its constituents, safranal, and crocin, were evaluated. It appears that saffron can, without risk, effectively combat certain fluoxetine-induced sexual disorders in women such as excitement, lubrication, or pain. Saffron has shown a positive effect on sexual function with an increase in the number and duration of erections in patients with erectile dysfunction–even after treatment for only 10 days.

**3. Antioxidant**

Carotenoids, which include crocin and crocetin, play an important role in health by acting as natural antioxidants. They protect cells and tissues from the detrimental effects of free radicals and reactive oxygen species (ROS). Crocin is the most studied active ingredient with regard to the antioxidant properties of saffron. However, it does not act alone—but thanks to work in synergy with other components such as safranal, dimethylcrocetin and flavonoids . Other studies focused on the negative effects of oxidative stress on our brain, since it is the organ most exposed to oxidation, due to the high phospholipid content of neuronal membranes and the existing link with development of neurodegenerative pathologies such as Alzheimer's disease, whose treatment with saffron can prevent the aggregation and deposition of amyloid β peptide in the human brain and can, therefore, be useful in Alzheimer's disease.

**4. Anticarcinogenic**

Cancer is the leading cause of death worldwide. Epidemiological evidence indicates that there is a correlation between a diet rich in antioxidants and a lower incidence of morbidity and mortality. Among the natural remedies, saffron and its ingredients (especially its carotenoids) have anti-tumor and anti-carcinogenic activities while not exerting any cytotoxic effect on healthy cells. A wide variety of natural substances has been identified as having the ability to induce apoptosis in various tumor cells. Among the many biological properties reported with saffron, those anti-carcinogens are of great interest and are extensively studied by experiments both in vitro and in vivo. Abdullayev et al. found that naturally occurring saffron extract—in combination with two synthetic compounds—sodium selenite or sodium arsenite, may have a synergistic effect with saffron and may, therefore, have an important role in cancer chemo prevention. Likewise, Botsoglou demonstrated that the inhibitory

effects of saffron against different malignant cells was dose dependent as well. Saffron pretreatment for five consecutive days prior to the administration of anti-tumor drugs, including cisplatin, significantly inhibited anti-tumor drug induced cellular DNA damage.

**5. Antispasmodic and Digestive Tonic**

Virtues have been attributed to saffron concerning the gastrointestinal and genital system, in particular, those of stimulating the stomach, reducing appetite, treating hemorrhoids, treating anus prolapse, limiting intestinal fermentations, helping with the treatment of amenorrhea, or to stimulate menstruation—and not to mention its abortifacient power. Safranal normalized gastric volume and pH, reduced the surface of gastric ulcer and produced gastric protection. In addition, it was able to improve the histological changes induced by indomethacin and the biochemical alterations of tissues.

**6. Anti-Inflammatory and Analgesic Effect**

There is great interest in natural compounds such as dietary supplements and herbal remedies used for centuries to reduce pain and inflammation. Extracts and tinctures of saffron have been used to treat fever, wounds, lower back pain, abscesses, and gingivitis as well as pain related to the eruption of the first teeth in infants. Aqueous and alcoholic extracts of stigmas and saffron petals have an antinociceptive and anti-inflammatory activity for both acute and chronic pain.

**7. Effect on Cholesterol Levels**

Nibbling is one of the dietary habits that are difficult to control, predisposing to weight gain and, consequently, obesity and subsequent metabolic complications (dyslipidemia, non-insulin-dependent diabetes, circulatory disorders, hypertension, chronic kidney disease, etc.). It mainly affects the female population and is frequently associated with stress. Due to the presence of crocetin, saffron indirectly helps to lower cholesterol levels in the blood and thus the severity of atherosclerosis, reducing the risk of a heart attack. The hypolipidemic effect of crocin is attributed to the inhibition of pancreatic lipase, thus limiting the absorption of fats and cholesterol. Previous studies have concluded that saffron has shown anti-obesity and anorectic effects in obese rat models. This thanks to its effect on the reduction of caloric intake by blocking the digestion of dietary fats via the inhibition of pancreatic lipase; the feeling of satiety due to the increased level of neurotransmitters without forgetting its role in the improvement of glucose and lipid metabolism. In addition, crocin has shown a significant

decrease in the rate of body weight gain, total fat deposition, and regulates the weight ratio of body fat to the epididymis.

**8. Effect on Blood Glucose and Insulin Resistance**

The use of high-dose crocetin (40 mg/kg) counteracts the development of insulin resistance by avoiding compensatory hyperinsulinemia; in fact, it limits dyslipidemia by maintaining the values of free fatty acids, triglycerides and LDL-c (Low Density Lipoprotein) in norms and avoids hypertension induced by a diet supplemented with fructose.

**9. Healing of Second-Degree Burns**

A study that aimed at evaluating the effectiveness of saffron extract cream in the treatment of heat-induced burns compared its results with those of silver sulfadiazine (SSD) in rats. The wound size of the saffron group was significantly smaller than that of the other groups. A histological comparison showed that saffron significantly increased the re-epithelialization of burn wounds compared with other treatments.

**10. Effects on the Eyes**

Saffron has been used traditionally by different nations for various eye diseases such as corneal disease, sore eyes, cataracts and purulent eye infection. The kohl pencil was used in Egyptian antiquity. It is still used today to make eyes black. In fact, oriental women used it to protect themselves from attacks related to the sun, the wind, the sand and possibly ocular infections as well. Kohl was, in fact, a very fine powder obtained by grinding cloves, rosewood, saffron, and antimony. Current investigations show that saffron extract can reduce eye diseases such as cataracts, retinal degeneration, light-mediated photoreceptor cell death.

- **Morphology**

The crocus plant bears violet-colored flowers, the stigmas of which are used as a spice. The stigma of saffron is dark red to reddish-brown in color. The style is yellowish brown to yellowish orange. Its odor is strong, characteristic, and aromatic. Its taste is characteristic and bitter. The stigmas are 25 mm in length and trifid shaped. The styles are about 10 mm long and are cylindrical in shape (Srivastava et al. 2010). The flowers are hysteranthous and flowering takes place in the month of October. Mother corms are replaced by daughter corms after flowering.

- **Distribution**

Saffron originated from Greece, Asia Minor, and Persia, and is currently produced in many countries including Iran, Algeria, Italy, India, France, Russia, Morocco, Persia, Turkey, and Spain. Its cultivation in the world extends through 0°–90° E, longitude (Spain–Kashmir), and 30°–45° N latitude (Persia–England) (Khan et al. 2011). In India, saffron is grown in the districts of Pulwama, Baramulla, Badgam, Anantnag, and Kishtwar in the union territory of Jammu and Kashmir (Dhar and Mir 1997). Major saffron-growing countries around the world are depicted.

- **Prevents hair loss**

The benefits of saffron extends to hair care too. It has long been a popular ingredient in Ayurvedic hair oils. Saffron's antioxidants mend follicles to generate hair growth. Saffron oil applied to the roots of the hair can promote new hair growth and offer you long, shiny and healthy tresses

- Saffron Benefits for Hair

✓ Help hair growth
✓ Prevent hair loss
✓ Increase hair transparency and shine
✓ Strengthen hair follicles
✓ May increase hair volume.

- Saffron Helps Hair Growth

This case of saffron benefits for hair may be an indirect effect, but it is worth thinking about. Saffron has lots of mineral nutrition like Manganese, Iron, and some vitamins. when we consume saffron, we have a natural and powerful multivitamin drug, but in raw form.

So we can say using saffron products can be very useful for our hair health. Also, other saffron benefits can indirectly help hair growth.

Saffron has some positive effects on our modes and our modes have a direct relative with our hair growth and persistence, So, It seems using saffron products helps hair growth.

- Increase Hair Transparency and Shine

Saffron and its ingredients can be helpful for hair transparency and shine. There's not this statement in research or articles, but this is the experience of Iranian girls when they use

saffron in hair mask templates. Lots of saffron oils and other processed products are on the market that is useful for our hair and face skin. We don't verify their application, and we aren't sure we can help with this. Every country's relative organizations analyze these products and issue the necessary permits.

- May Increase Hair Volume

Some researches show that depression can cause hair thinning and rarely hair loss. Saffron can be very helpful in decreasing depression signs such as hair thinning and side effects of consumption of drugs like Fluoxetine.

**How to Use Saffron For Hair Health**

Saffron has a high rate of absorption and returns in the body, so any of the following methods can be helpful:

- ✓ Eating saffron in foods such as saffron rice
- ✓ Use the saffron hair mask
- ✓ Use saffron oil
- ✓ Use of saffron extract
- ✓ Saffron drinks such as saffron tea and saffron milk
- ✓ Dye hair with saffron

## ❖ Methodology

➢ Procedure

1. Take 100 mg Saffron (we used marketed saffron from Everest)
2. Keep it dipped into cow milk for 4 hour for achieving the chemical constituents of saffron into the milk I.e. beneficial for hair conditioning
3. Take 250 ml coconut oil
4. Heat oil for a while on low flame
5. Add saffron aided milk in it
6. Oil was yeilded

Take 100 mg Saffron

↓

Keep it dipped into cow milk for 4 hour for
achieving the chemical constituents of saffron into the milk

↓

Take 250 ml coconut oil

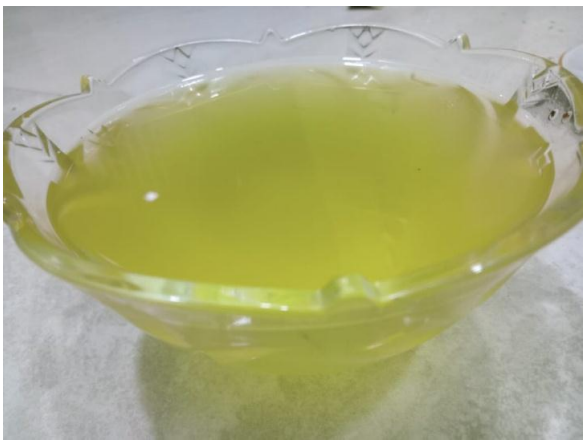
↓

Heat oil for a while on low flame

↓

Add saffron aided milk in it

↓



❖ **Quantitative components**

| Sr.no. | Ingredients | Quantity |
|---|---|---|
| 1. | Coconut oil | 300 ml |
| 2. | Cow's milk | 15 ml |
| 3. | Saffron | 100 mg |

As the result of the procedure we can see that the fat constituents present in the milk gets deposited at the base of the oil and proteins we needed for the conditioning of hair are extracted into the oil.

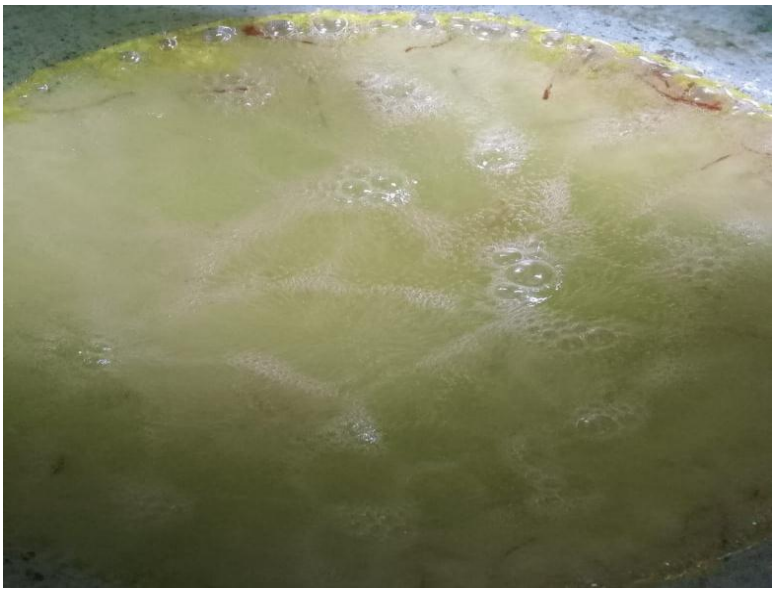
**Fig: Deposited fat on the bottom of the oil after heating.**

❖ **Diagrammatic Methodology**

**Fig: Raw milk & Saffron.**

**Fig: Saffron dipped in cow milk.**

**Fig: coconut oil.**



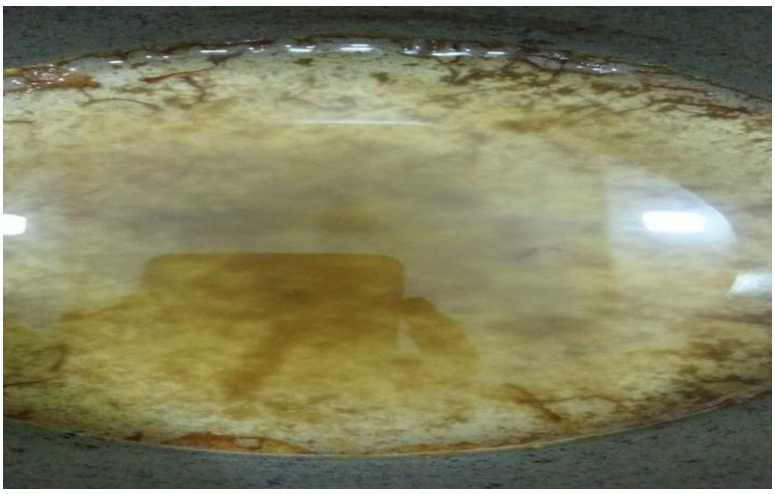


**Fig: boiled oil with fats deposited on the bottom of the vessel.**

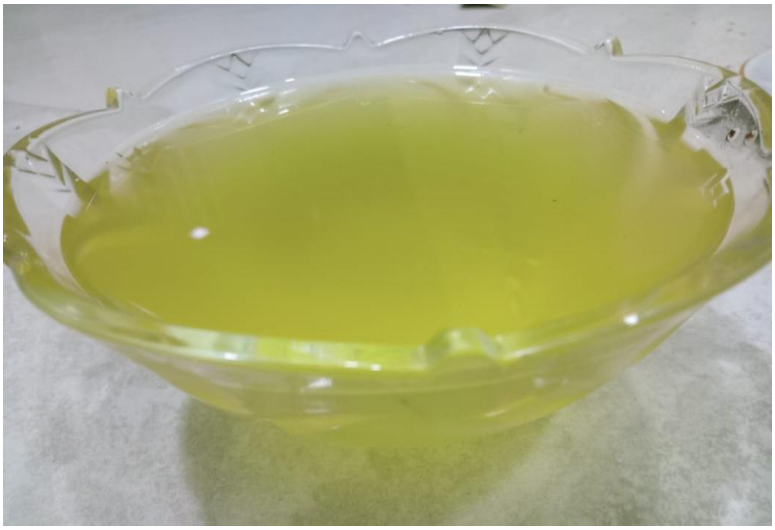


**Fig: Final product**

❖ **Evalution Parameters**

The formulated herbal conditioning oil was evaluated for parameters like pH, acid value, saponification Value, refractive index, viscosity and organoleptic parameters.

➢ **Chemical Evaluation**

**A. Acid Value**

Preparation of 0.1 molar solution: Weighed 0.56 g KOH pellets and dissolved in 100 mL of distilled water and stirred continuously. The prepared 0.1 molar KOH solution was filled in the burette. Preparation of sample: Measured 10 mL oil and dissolved in 25 mL of ethanol and 25 mL of ether mixture and shacked. Added 1 mL of phenolphthalein solution and titrated with 0.1 molar KOH solution.

$$\text{Acid value} = 5.61n/w$$

Where,

n= Number of ml of 0.1M KOH

w= Weight of oil

**B. Saponification Value**

Accurately weighed 1 mL of oil into a 250 mL of conical flask and 10 mL of ethanol: ether mixture (2: 1) was added. To this flask 25 mL of 0.5 N alcoholic KOH was. Kept the flask for 30 min. and the flask was cooled. The cooled solution was titrated against 0.5 N HCl using phenolphthalein indicator. Similarly the blank titration was performed without taking oil (sample). Amount of KOH in mg used was calculated.

$$\text{Saponification Value: } 28.05(b-a)/w$$

Where,

w= weight in grams of the solution.

- **Physical Evaluation**

**C. pH**

pH of the conditioning hair oil was detected using pH meter.

**D. Viscosity**

Viscosity was determined using Ostwald's viscometer.

Viscosity is a measure of the resistance of a fluid which is being deformed by either stress or tensional stress. Thoroughly clean the viscometer. Mount the viscometer in vertical position on a suitable stand. Fill dry viscometer upto g mark. Count the time required in seconds for hair oil sample to flow from mark A to B. Repeat three times. Determine the densities of the liquids. The viscosity was determined using Ostwald's viscometer.

**E. Specific Gravity**

Specific gravity of the prepared oil was determined using pyknometer or specific gravity bottle.

Take the specific gravity bottle, rinsed it with distilled water, dry it in oven for 15 minutes, cool, closed it with cap and weigh it (a). Now fill the same specific gravity bottle with the sample and closed it with cap and again weigh it (b). Determine the weight of sample per milliliter by subtracting the weight (b-a).

**F. Refractive Index**

It was determined using refractometer.

Refractive Index (Index of Refraction) is a value calculated from the ratio of the speed of light in a vacuum to that in a second medium of greater density

The average refractive index of cow milk has been found to be 1.3461

The refractive index of coconut oil was found to be 1.43

The refractive index of milk samples was measured with a reflectometer. Fresnel's formula for intensity reflectance and the concept of critical angle were applied to measured data. Milk samples were also measured with surface plasmon resonance sensor for refractive index assessment. The experiments were carried with commercial milk that had fat volume concentrations of 0.004, 1.53, and 3.55%. We observed that simultaneously quantitative

information about the refractive index and absorption of milk, as a function of fat concentration, could be obtained with both devices.

$$N = c/v$$

Where,

n=refractive index

C= speed of light

V= phase viscosity of light

**G. Organoleptic Property**

Colour, odour, skin irritation was determined manually.

**H. Irritation Test**

- Oil was applied on hand to verify irritation ; no irritation was found

- Hair oil was applied to hand and exposed to sunlight for 5 mins

- Hair oil was applied to hair for 30 mins and then hair is washed ; no irritation found on scalp
- Hair oil was applied to hair and scalp overnight and then washed it off ; no irritation was found

| Sr.no. | Test | Observation |
|---|---|---|
| 1. | Oil is applied to hand | No Irritation |
| 2. | Hand is Exposed to sunlight | No irritation |
| 3. | Oil is applied hair for 30 mins | No irritation |
| 4. | Oil is applied to hair overnight & then washed off | No irritation; smoother hairs are observed |

| Sr.no. | Test | Observation |
|---|---|---|
| **1.** | Color | Pale yellow color |
| **2.** | Odor | Pleasant aromatic |
| **3.** | Irritation | No irritation |
| **4.** | Overnight application | No irritation ; smoother hair are observed |
| **5.** | Acid value | 5.61 n/w |
| **6.** | Saponification value | 252.47 mg of KOH |
| **7.** | pH | 5.5 |
| **8.** | Viscosity | 1.80 Ns/m 2 |
| **9.** | Specific gravity | 1.0050 Kg/m 3 |
| **10.** | Refractive index | 1.3430 |

## RESULT

### 1. Organoleptic Properties

Like colour was found to be pale yellow colour and odour found to be **pleasant aromatic**.

**2. Irritation**

4 tests was performed and found to be **no irritation.**

**3. Acid Value**

Acid value was found to be **5.61.**

**4. Saponification Value**

Saponification value found to be **252.47 mg of KOH**

**5. pH**

pH was found to be **5.5**

**6. Viscosity**

Viscosity was found to be **1.80 N.s/M2**.

**7. Specific Gravity**

Specific gravity was found to be **1.0050 kg/m3.**

**8. Refractive Index**

Refractive index is found to be **1.3430.**

| Sr.no. | Test | Observation |
|---|---|---|
| 1. | Color | Pale yellow color |
| 2. | Odor | Pleasant aromatic |
| 3. | Irritation | No irritation |
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| 9. | Specific gravity | 1.0050 Kg/m 3 |
| 10. | Refractive index | 1.3430 |
| | Test | Observation |
| 11. | Oil is applied to hand | No Irritation |
| 12. | Hand is Exposed to sunlight | No irritation |
| 13. | Oil is applied hair for 30 mins | No irritation |
| 14. | Oil is applied to hair overnight & then washed off | No irritation; smoother hairs are observed |

## CONCLUSION

Has be found the horrible conditioning oil the conditioning oil does not have any side effect or effect on a skin or a hair scalp it have a beneficiary effect has compared to the chemical conditioner oils the herbal conditioner oil is very useful has a home remedy which can only be a remedy for the hair scalp to free from the split ends and dandruff free the coconut oil and the combination of saffron and raw milk is a rare combination which gives a separate beneficiary elements which helps to grow the new hair and free the Harris from split ends the Rock cow milk gives smooth surface on a skin and on a hair scalp and also saffron nourish the hair.

As oil contains all the natural herbal ingredients it has no side effects on scalp and hair. We used coconut oil for providing nutrition to scalp and maintaining the oil for scalp & cow milk was used as conditioning agent in oil as it contains caesin which is best for hairs as after application of this oil to the hair there is no need to use any additional conditioner while washing hairs. saffron purifies the scalp and pores, inhibits hair loss, promotes healthy hair growth and repairs damaged hair due to its antioxidant properties.

This conditioning oil provides proper nutrition to the hair ,reduces split ends & reduce hair loss. It is best for application as there is no need to use conditioner after application of this oil as conditioner contains harmful chemicals which damages our hair.

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