

Formulation of herbal hair mask from fenugreek & flaxseed

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Abstract

Hair is an important and delicate element of the human body. People nowadays suffer from severe hair-related issues such as hair loss, dry hair, thinning hair, dandruff, and so on. Hair loss can be caused by a variety of factors, including physiological diseases, emotional or physical stress, nutritional inadequacies, and hormonal imbalances. As a result, herbal hair mask formulations could be employed to properly care for hairs. Herbal medications have less side effects and are more effective than synthetic drugs. As a result, fenugreek seeds and flaxseeds are utilised as herbal ingredients in the composition of the herbal hair mask. Fenugreek gives strength, nourishment, moisturization, and aids in the eradication of a type of fungus that causes dandruff, while flaxseeds are a good source of vitamin B, which helps the hair grow stronger and healthier, prevents split ends, and prevents premature greying.

Keywords: flaxseeds, fenugreek seeds, aloe and herbal hair mask

Introduction

History of fenugreek

Fenugreek is believed to have first appeared in Indian cuisine 3000 years ago. Fenugreek is an annual herbaceous plant that can grow up to 60 centimetres tall. It has been observed growing in the wild in Punjab and Kashmir. It was also reportedly employed in ancient Egypt. and India was followed by Greece and Rome. In Egyptian rituals, the usage of incense to emit "holy smoke" is an important component of the practise. It is also employed in mummification. Argentina, Egypt, and the Mediterranean region are also fenugreek-growing countries. Indian fenugreek industry is well-known for dominating global production and export. India has the most agricultural area with the large scale production in Rajasthan.

Trigonella foenum-graecum L. Fenugreek gets its name from its yellow-white triangular blooms, which mean "triangle" in Latin. It is one of history's oldest herbs, with distinct therapeutic and nutritional characteristics. It is resistant to salinity, drought, and heavy metals and can adapt to a variety of climates and marginal land. Fenugreek seeds are high in oleic acid, niacin, linolenic acid, linoleic acid, fibre, glycolipids, phospholipids, choline, and the vitamins A, B1, B2, C, and niacin. Fenugreek has been demonstrated in studies to have a variety of therapeutic properties, including anti-diabetic, antioxidant, antibacterial, anti-anorexic, and anti-inflammatory properties. Fenugreek also has the potential for expansion in terms of income from producers, traders, and allied enterprises.

Fenugreek is currently grown in many Asian, European, and African nations whereas in India, the yield of fenugreek is around 1675 kg/da, while it is around 1400 kg/da and 3700 kg/da in Egypt and England, respectively. The valuable fenugreek resources can be employed commercially to help the agricultural community and the country's economy.

Flaxseed's historical overview

Flaxseed, as it is commonly known as linseed, is a fibrous crop grown in places with low average humidity. Flaxseed

is one of the principal products of the flax plant, along with other goods such as linseed oil and linen. Flaxseed is high in omega-3 fatty acids and has been dubbed a "superfood" by the fitness world. Flax seeds are tiny, with brown variety being the most common kind. Flax has been cultivated in Asian nations such as India from at least last 5,000 years. The seeds are grown in Gujarat and Madhya Pradesh, India, in well-drained soil and sunny conditions. It is a food and fibre plant that grows in freezing climates. Flaxseed has a pleasant earthy flavour and numerous health benefits. Flaxseed, which is high in protein and fibre, is also acts as a health booster.

Flaxseed is one of the world's oldest crops, having been grown since the start of civilisation. *Linum usitatissimum*, which means "useful" in Latin, is the Latin name for flaxseed. Linen was first introduced to the United States by settlers, who used it to make garment fibres. All parts of the flax plant have commercial applications, either directly or after processing. Premium fibres with excellent strength and durability are produced by the stems. Until the 1990s, flax was primarily used in the production of fabric (linen) and paper, while linseed oil and its byproducts were used as animal feed. The names flaxseed and linseed are used interchangeably. Flaxseed refers to flax used for human use, whereas linseed refers to flax used for commercial and feed reasons.

Because of the health advantages of some of its bioactive components, flaxseed has become the focus of nutrition and disease research during the last two years. Flaxseed is high in omega-3 fatty acids, including alpha-linolenic acid (ALA), short-chain polyunsaturated fatty acids (PUFA), soluble and insoluble fibre, phytoestrogen lignans (SDG), protein, and several antioxidants. Its popularity stems from its health benefits, which include lowering the risk of cardiovascular disease, lowering the risk of cancer (particularly breast and prostate cancer), anti-inflammatory action, laxative effect, and aiding in the relief of menopausal and osteoporosis symptoms.

Flaxseed comes in two varieties: brown and yellow or gold. Both have the same nutrients and short-chain omega-3 fatty acid content. One exception is soline (trade name linola), a yellow flax with a totally different oil that is poor in omega-3 fatty acids. Brown linen is frequently used in paints, varnishes, textiles, and livestock feed. Flax is available in a variety of forms at the grocery store, including whole flaxseed, ground flax, roasted flax, and flaxseed oil. Flaxseed is high in oil, protein, fibre, soluble polysaccharides, lignans, phenolic compounds, vitamins (A, C, F, E), and minerals (P, Mg, K, Na, Fe, Cu), as well as manganese and zinc.

Materials & methodology

Materials



Fig 1: Fenugreek

Synonym-Methi, Bird's foot, Greek hay seeds.
Scientific name-*Trigonella foenum graecum*.
Family-Fabaceae.

Fenugreek (*Trigonella foenum graecum*) is an annual herb of family Fabaceae. Methi is a Hindi word that translates to fenugreek in English. After soaking for 30 minutes, these methi seeds are used. It is a popular meal among the general public. Throughout human history, fenugreek seeds and green leaves have been employed in food and medicinal preparations. It can affect the texture of food as well as add flavour and colour. Fenugreek seeds have hypocholesterolemic, lactogenic, antibacterial, stomach stimulant, anorexia, antidiabetic, lactogenic, hepatoprotective effects, and anticancer activities. The good effects of fenugreek on the body, such as its anti-diabetic and cholesterol-lowering properties, are primarily owing to the food's high fibre content. It's wellknown for its fibres, gums, and other compounds that are volatile or flammable.

Fenugreek seeds are high in dietary fibre, which alters the texture of meals. Because of its fibre, protein, and gum content, it is now employed as a food stabiliser, binder, and emulsifier. Fenugreek proteins have been reported to be more soluble at alkaline pH. Fenugreek is good for digestion and can be used to modify the food. Methi is utilised for more than just cooking. It can also be used in the clinic to reap its numerous benefits, such as improving digestion and reducing hair loss. Methi seed is regarded as one of the most effective hair loss treatments. Hair loss is a prevalent issue these days. It has a lot of folic acid, vitamins A, K, and C. Methi also aids in the hydration and restoration of hair lustre.

Phytochemistry

Many phytochemicals, including steroidal saponins, are found in fenugreek. Diosgenin is a chemical found in fenugreek oilseeds. Two furanyl glycosides, which are precursors of F-ringopened diosgenin, have been identified as fenugreek hederacides. Trihomcoumarin, niacin, trimethylcoumarin, and trigonelline are among the alkaloids found in the stem. The primary component of the seeds is mucilage. It includes around 28% mucus, essential oil, two types of alkaloids (trigonelline and choline), 5% non-volatile oil with a bitter flavour, 22% protein, and a yellow colouring substance are present in the stem of plant. Fenugreek has a protein content of 23.26%, a lipid content of 6-7%, and a carbohydrate content of 58%, 25% of which is dietary fibre. Fenugreek is rich in iron, at 33 mg per 100 g dry weight.

A. Fenugreek leaves

Fenugreek leaves contain seven saponins known as graecunins. These substances are diosgenin glycosides. Leaves have an estimated 86.1% water content, 4.4% protein, 0.9% fat, 1.5% minerals, 1.1% fibre, and 6% carbohydrates. Calcium, zinc, iron, phosphorus, riboflavin, carotene, thiamine, niacin, and vitamin C are all found in the leaves. Yadav and Sehgal (1997) discovered that fresh fenugreek leaves contain around 220.97 mg of ascorbic acid and approximately 19 mg/100 g of beta-carotene per 100 g of leaves. Ascorbic acid, on the other hand, was found to be reduced by 84.94% and 83.79% in sun and oven-dried fenugreek leaves, respectively. Its fresh leaves are consumed as a vegetable. The nutrients in fenugreek leaves have been proven to be well maintained. Fenugreek leaves should be refrigerated, dried in the oven or blanched for a few minutes (approximately 5 minutes) before cooking under pressure on the stove.

B. Fenugreek seeds

Fenugreek seeds have a delightful bitter, somewhat sweet flavour. The seeds are available in whole or ground form and are used to manufacture a variety of cuisines, including curry powder, teas, and spice blends. A firm yellow embryo is surrounded by a horny and big white translucent endosperm in fenugreek seeds. The chemical composition of fenugreek (including seeds, husks, and cotyledons) revealed that the endosperm had the highest saponin level (4.63 g/100 g) and the highest protein content (43.8 g/100 g). Fenugreek seeds husk is rich in total polyphenols. Endosperm bark and fenugreek seed extracts demonstrated free radical scavenging antioxidant activity of 72%, 64%, and 56%, respectively, at a concentration of around 200 lg. Fenugreek seeds contain about 0.1-0.9% diosgenin, while extracts from fenugreek seed plant cultures have been proven to generate up to 2% diosgenin and trace levels of trihomogenine and trihomogenine. Saponins (trigoneloid B) are also found in the seeds. Fenugreek seeds have been discovered to contain a variety of alkaloids (including trigonelline, gentianine, and carpaine) as well as coumarin compounds. During the roasting process, the important trigonelline is converted to niacin and other pyridines. The principal bioactive chemicals in fenugreek seeds are polyphenolic compounds like trigonelin and isovitexin, while the seeds contain trace levels of essential and non-volatile oils.

Main advantages of methi for the hairs

1. Strengthen hair from the root

By limiting the growth of germs and yeast on the scalp, the herb can reduce scalp-related issues such as dandruff and itching. This is because of fenugreek saponins have antifungal and antibacterial effects. It is made up of a substance called lecithin. This is a natural emollient, which means it moisturises and conditions the scalp to give you a gloss and softness, as well as strengthening the hair from the root. This helps to decrease dryness and breakage.

2. Treat follicular issues

Fenugreek plant components may interact with a substance in the body known as DHT (dihydrotestosterone). Hair loss would occur if DHT became attached to your hair follicles. Fenugreek may inhibit DHT's ability to connect to your hair follicles.

3. Improves Shine

It improves the lustre and softness of your strands. This is accomplished by restoring the hair shaft from the damage

produced by heat-styling tools. This improves the look and feel of your mane.

4. Prevents premature greying

Because it is high in potassium and iron, it prevents premature greying.

5. Fight Scalp Problems

Due to its anti-inflammatory and antioxidant characteristics, fenugreek can naturally ease inflammation and irritation in the scalp. This benefits the scalp's health.

6. Fenugreek enhances the strength of your mane because to its high iron and protein content. These are important nutrients for having healthy hair.

7. Fenugreek is high in vitamins A, C, and K, as well as folic acid, calcium, iron, potassium, and protein. These nourish the scalp and promote hair growth.

Table 1: Chemical constituents

Sr. No.	Class of chemical constituents	Chemical constituents
1.	Alkaloids	Trimethylamine, neurin, trigonelline, choline, gentianine, carpaine and betain
2.	Amino acids	Isoleucine, 4hydroxyisoleucine, histidine, leucine, lysine, L-tryptophan, tyrosine, arginine
3.	Steroidal sapinogens	Diosgenin, glycosides, smilogenin, Yamogenin, sarsasapogenin, tigogenin, neotigogenin, gitogenin, neogitogenin, yuccagenin, saponaretin.
4.	Flavonoids	Quercetin, rutin, vitexin, isovitexin
5.	Lipids	Triacylglycerols, diacylglycerols, monoacylglycerols, phosphatidylcholine phosphatidylethanolamine, phosphatidylinositol, free fatty acids.
6.	Others	Vit. A, folic acid, nicotinic acid, ascorbic acid, coumarin, minerals, 28% mucilage; 22% proteins; 5% of a stronger swelling, bitter fixed oil.

Organoleptic characters

Colour-seeds are brown to reddish brown in colour.

Odour-characteristics, strong, aromatic

Taste-Bitter

Size- 3-5 to 2-3mm & 1.5 to 2 mm thick Shape- Rhomboidal with rounded edges.

Table 2: Nutraceutical properties of fenugreek

Sr. No.	Component used	Beneficial effects
1.	Fenugreek Seeds	a) Hypoglycemic effect
		b) Hypocholesterolemic effect
		c) Lactation aid
		d) Immunomodulatory effect
		e) Digestive effect, Prevents constipation
		f) Asthma, emphysema, pneumonia
		g) Induces growth and reproduction hormones
2.	Fenugreek seeds & leaves	a) Decreases blood pressure
		b) Antioxidant
		c) Wounds and sore muscles treatment
		d) Anti-cancer agent
		e) Anti-ulcer agent
		f) Gastro- and hepatoprotective
		g) Digestive and appetizer

Uses

1. Fenugreek seeds are high in protein and nicotinic acid, both of which aid in the prevention of hair loss and dandruff.
2. Fenugreek in treatment of Diabetes -Fenugreek seeds have been found in animal and human trials to rapidly reduce diabetes. Fenugreek is also utilised as a diabetes treatment for both type 1 and type 2 diabetes. Fenugreek's lipid-lowering and anti-diabetic properties

are attributed to saponins and diosgenin. In people and experimental animals, fenugreek has been shown to be an antihyperglycemic herb.

3. Fenugreek in cancer treatment-Fenugreek is a herb that is utilised in the treatment of cancer patients as part of chemotherapy. It has been demonstrated to offer significant therapeutic potential in the treatment of cancer. Fenugreek contains diosgenin, which slows cell growth. Hepatoprotective properties of fenugreek seeds

have been demonstrated. Fenugreek seed polyphenol extract protects the liver from ethanol-induced hepatic damage.

4. Antioxidant properties of fenugreek-Fenugreek possesses antioxidant effects due to its flavonoid and polyphenol levels. Polyphenols in fenugreek seeds reduce hemolysis of red blood cells and lipid peroxidation, hence avoiding oxidation produced by hydrogen peroxide.
5. Fenugreek lowers cholesterol- Hypocholesterolemia is a condition in which there is a low level of cholesterol in the blood. Fenugreek enhances bile acid and cholesterol excretion in the faeces. Fenugreek seeds help to reduce cholesterol. As a result, fenugreek seeds reduce cholesterol levels.
6. Fenugreek in antibacterial activity-Fenugreek seed extract has antibacterial action against *Escherichia coli*, *Salmonella typhi*, and *Staphylococcus aureus*. Fenugreek is an antibacterial herb that kills germs.
7. Fenugreek and obesity-Obesity is a major cause of morbidity and mortality. This is indicative of abnormal growth of adipose tissue. Fenugreek seed extract can aid in the reduction of body weight and fat tissue. One method for losing weight and body fat with fenugreek is that it eliminates carbs from the body before they enter the bloodstream, resulting in weight loss. Fenugreek seeds have a soluble fibre content of 40%. These fibres produce a gel-like structure in the intestines, slowing digestion and absorption, improving stomach function, suppressing appetite, and promoting weight loss.
8. Fenugreek's gastrointestinal protective effect-Fenugreek seeds are useful against gastrointestinal illnesses & gastric ulcer. Fenugreek seed aqueous extracts and gel fractions exhibited considerable ulcer protective effects.
9. Digestive action of fenugreek – The spice ingested with meals influences the digestive enzymes in the pancreas. Fenugreek stimulates pancreatic lipase activity. Fenugreek's high fibre content aids in constipation relief.
10. Anti-inflammatory effect of fenugreek-Fenugreek extract includes alkaloids that have antiinflammatory properties. The presence of saponins and flavonoids in fenugreek may explain its anti-inflammatory benefits.



Fig 2: Flaxseeds

Synonym-Linseed, linum

Scientific name-Linum usitatissimum Linn.

Family-Linaceae.

Geographical origin-The plant is grown all over the world for the production of fibre and seeds, with Morocco, Argentina, Belgium, Hungary, the United States, and India being the most prominent suppliers.

Flaxseed is a valuable food because it contains alpha-linoleic acid (ALA, omega-3 fatty acids), lignans, and fibre& flaxlignans have potential health benefits such as reduction cardiovascular diseases, atherosclerosis, diabetes, cancer, arthritis, osteoporosis, autoimmune, and neurological illnesses which are degenerative diseases. Furthermore, flaxseed is high in fatty acids and antioxidants, which aid in the removal of toxins and dead cells from the scalp.

Flaxseed production on a global scale

Flaxseed is one of the richest plants in omega-3 fatty acids, alpha-linolenic acid (ALA), and lignans (phytoestrogens). Canada, China, America, India, and Ethiopia are major flaxseed producing countries. With 420,000 tonnes of flaxseed produced in 2010, Canada accounts for nearly 80% of the worldwide flaxseed market. India has 4th rank with 0.15million tonnes of total flaxseed production. The following figure shows the average total world flaxseed production during the last 10 years, as well as the top five producer countries over the last five years-

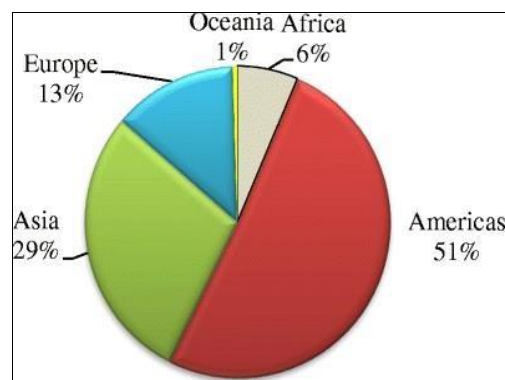


Fig 3

Chemical constituents

1 tablespoon of flaxseed contains –

Calories: 37 g,

Protein: 1.3 grams,

Carbs: 2 grams,

Fiber: 1.9 grams,

Total fat: 3 grams,

Omega-3 fatty acids: 1,597 mg,

Vitamin B1: 8% of the RDI (Recommended Daily Intake)

Vitamin B6: 2% of the RDI,

Folate: 2% of the RDI,

Calcium: 2% of the RDI,

Iron: 2% of the RDI,

Magnesium: 7% of the RDI,

Phosphorus: 4% of the RDI, Potassium: 2% of the RDI.

Fixed oil-20 to 40%, proteins-20%, pectin-10% Mucilage-

7% Dietary fibers-soluble (20-40%)-mucilage; insoluble

(60-80%)-cellulose, hemicellulose, lignin Vitamins-vit.A,

vit.c, vit. E, vit. B6, thiamine.

Organoleptic characters

Colour-Brown

Odour-None

Taste- Mucilaginous

Size-Seeds are 4 to 6 mm in length & 2 to 2.5 mm in width.

Shape-Elongated, ovate, rounded at one end & pointed at the other end.

Uses

1. Flaxseed's omega-3 fatty acids offer protein and nourishment to hair follicles. It increases circulation in the scalp and aids digestion.
2. Soluble fibre aids in blood sugar and cholesterol regulation. It also promotes intestinal health by feeding beneficial gut flora.
3. Flaxseed consumption can aid enhance health and reduce constipation. In fact, flaxseed is high in soluble fibre. Soluble fibre dissolves in water, softening and making stool easier to pass. This will aid in the reduction of constipation caused by digestive problems such as irritable bowel syndrome and diverticulosis.
4. Flaxseed may help control diabetes or reduce the risk of diabetes – Due to its high fiber content, flaxseed is considered a low glycemic food. This means that drinking them does not cause your blood sugar to rise, but keeps them high by supporting blood sugar control
5. Thiamine – This B vitamin is also known as vitamin B1. It is important to normalize the metabolism and nervous system.
6. Magnesium – An essential mineral that has many roles in your body, magnesium is abundant in grains, seeds, nuts and green leafy vegetables.
7. Promotes a healthy scalp – Flaxseed is high in nutrients, including vitamin E. Vitamin E promotes scalp health by lowering the presence of free radicals. The vitamin promotes blood flow, which strengthens the hair and prevents aging-related hair loss. Flaxseed contains omega-3 fatty acids, which are beneficial to skin and hair maintenance.
8. Moisturises the scalp – Omega 3 fatty acids aid in hair and scalp locking. It also helps to heal dry hair and prevent hair loss, thinning, and dandruff.
9. Nourish the scalp – Flaxseed contains nutrients such as B vitamins, magnesium, selenium, and copper, which are not only beneficial to your health but also to your scalp and hair. A flaxseed mask helps revitalise damaged and drab hair.
10. Lowers Cholesterol – According to the Journal of Nutrition and Metabolism, including flaxseed in your diet can help lower cholesterol. Flaxseed's soluble fibre concentration binds fat and cholesterol in the digestive tract, rendering them non-absorbable. Soluble fibre also suppresses the production of bile in the gallbladder from cholesterol. Bile is subsequently expelled from the digestive tract, causing the body to create more bile, raising blood cholesterol while decreasing total cholesterol.

Pharmacological Activity

1. Antiarrhythmic effects
2. Antithrombotic and antiplatelet effects
3. Antihypertensive properties
4. Antilipidemic properties
5. Antineoplastic properties
6. Antioxidant properties
7. Arterial conformity
8. Laxative properties
9. The effects of weight loss



Fig 3: Aloes

Synonym-Kumari, musabbar

Scientific name-Aloe barbadensis miller known as curacao aloes.

Family-Liliaceae

Aloe vera is scientifically known as Aloe barbadensis miller. It is a Liliaceae family tree-shaped perennial dry, succulent pea-shaped green herb. It thrives in arid parts of Africa, Asia, Europe, and North America. It is found in Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, and Tamil Nadu in India.

Anatomy-Triangular succulent leaves with serrated edges, yellow tubular blooms, and fruit with many seeds characterise the plant. Each sheet has three layers. 1) It is a clear gel that is 99% water with the remainder made up of glucomannan, amino acids, lipids, sterols, and vitamins. 2) The yellow acid in the intermediate layer of rubber contains anthraquinone and glycosides. 3) The cortex is a thick layer of 15-20 cells that has good defensive properties and combines carbs and proteins. The shell contains vascular bundles that transport water (xylem) and starch (phloem).

Chemical composition

Active Ingredients and Characteristics

Aloe Vera contains 75 active ingredients, including vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acid, and amino acids.

1. Vitamins: vitamin A (beta-carotene), C, E, and other antioxidants are present. It also includes B12, folic acid, and choline. Free radicals are neutralised by antioxidants.
2. Enzymes: Lipase, alkaline phosphatase, amylase, bradykinase, carboxypeptidase, catalase, cellulase, lipase, peroxidase are the eight enzymes. When applied topically to the skin, bradykinase aids in the reduction of excessive inflammation, while other enzymes aid in the breakdown of carbohydrates and fats.
3. Minerals-Calcium, Chromium, Copper, Selenium, Magnesium, Manganese, Potassium, Sodium and zinc are present. They are rare antioxidants that are required for the proper functioning of various enzymatic systems in various metabolic processes.
4. Sugar- It is composed of monosaccharides (glucose and fructose) as well as polysaccharides (glucomannan/polymannose). They are named mucopolysaccharides because they come from the mucus layer of plants. Mannose-6-phosphate is the most prevalent monosaccharide, whereas glucomannan

[-(1,4)-acetylated mannan] is the most abundant polysaccharide. Acemannan, a kind of glucomannan, is also present. Alprogen, a glycoprotein with anti-inflammatory characteristics, and C-glucosylchromone, a new anti-inflammatory drug, were recently isolated from aloe vera gel.

5. Anthraquinones: Contains 12 anthraquinones, which are phenolic chemicals that are often used as laxatives. Emodin and aloin are antiseptic, antibacterial and antifungal agents.
6. Fatty Acids: Provide four plant steroid hormones: cholesterol, campesterol, beta-sitosterol, and lupeol. All of these are anti-inflammatory, and lupeol is also antimicrobial and analgesic.
7. Hormones: Auxins and gibberellins that aid in wound healing and prevents inflammation.
8. Others: It contains 20 of the 22 essential amino acids and 7 of the 8 essential amino acids. Salicylic acid, which has anti-inflammatory and antibacterial effects, is also present. Lignin is a weak chemical that improves the penetration of other substances into the skin when used in cosmetics. Saponins, which are soap-like compounds that include about 3% of the gel and have washing and disinfecting effects, make up about 3% of the gel.

Uses

1. Aloe vera's three vitamins, A, C, and E, all contribute to cell turnover, encouraging healthy cell growth and lustrous hair.
2. Aloe vera gel also contains vitamin B12 and folic acid, both of which preserve hair from falling out and minimise hair fall.
3. It has a moisturising effect, heals eczema and psoriasis, and is beneficial in the treatment of skin disorders and dermatitis.
4. Aloe vera reduces blood sugar levels in type 2 diabetes patients.
5. Gastroesophageal reflux disease (GERD) is a digestive disorder that frequently causes heartburn, and taking 1 to 3 ounces of aloe gel at mealtime helps to lower the severity of GERD.
6. Aloe vera is well-known for its antibacterial, antiviral, and antiseptic characteristics, which aid in the healing of wounds and the treatment of skin issues.
7. Tooth decay and gum disease are fairly prevalent health issues. Aloe vera kills the plaque-producing bacterium *Streptococcus mutans* as well as the yeast *Candida albicans* in the mouth.
8. Aloe vera may also aid in the treatment of constipation. The primary chemical responsible for this effect is known as aloin, or barbaloin, and it has long been used for its laxative properties.



Fig 4: Yoghurt

Because yoghurt is a fermented dairy product, it helps to preserve the nutrients in milk. Many different types of yoghurt are now available all over the world, ranging from low-fat fruit yoghurts to Greek-style yoghurts with around 8g of fat per 100g. Yoghurt is a food that is made by bacteria fermenting milk. A yoghurt starter is the bacterium that is used to manufacture yoghurt. These bacteria ferment the carbohydrates in milk, breaking down the protein and creating lactic acid, which is responsible for the sour taste of milk. Cow's milk is the milk that is commonly used to produce yoghurt. Yoghurt is also made from cow, goat, and camel milk. It can be pasteurised or unpasteurized. A *Streptococcus thermophilus* culture is used to make yoghurt.

Uses

1. It is known to contain calcium, an essential mineral for teeth and bones. It also contains B vitamins, specifically vitamin B12 and riboflavin, which may help prevent heart disease.
2. Certain probiotics, such as bifidobacteria and lactobacilli found in yoghurt, have been demonstrated to alleviate the symptoms of irritable bowel syndrome (IBS).
3. Yoghurt and curd contain antifungal characteristics. As a result, it will aid in deeply cleansing the scalp of excess oil or filth that causes dandruff.
4. It is critical to maintain the scalp's pH at a healthy level. Yoghurt helps to keep the scalp's pH balanced.
5. Yoghurt is a fantastic substance for scalp protection. Yoghurt helps to eliminate dandruff. It alleviates itching. Curd is high in antimicrobial qualities and so beneficial to hair.

Effects of using this herbal hair mask

1. Because fenugreek has anti-inflammatory and antioxidant characteristics, this herbal hair mask is used to alleviate skin irritation and inflammation.
2. The flaxseed in this hair mask helps hair grow quicker and longer by nourishing the hair follicles, while the vitamin E in flaxseed nourishes the scalp and minimises free radical damage.
3. Lactic acid obtained from curd and curd is used in herbal hair masks to help cleanse the scalp and eliminate dead skin cells. This helps to strengthen the roots and prevents hair loss.
4. This Aloe Vera hair mask helps to minimise skin irritation and inflammation. It contains enzymes and fatty acids that aid in the reduction of inflammation.
5. This hair mask provides nutrients that are necessary for healthy hair. Fenugreek has a lot of iron & nutrients.
6. In addition to shaping curly hair, flaxseed can help maintain hair straight and moisturised.
7. The antifungal qualities of aloe vera in hair masks can aid in the killing of yeast development.
8. Fenugreek is high in vitamins A, C, and K, as well as folate, calcium, iron, potassium, and protein. These improve scalp health and promote hair growth.
9. Mucopolysaccharides in aloe vera have moisturising effects. These compounds can aid in the binding of moisture to the skin and hair.
10. Flaxseed's omega-3-fatty acid components have an anti-inflammatory reaction and limit the exchange of the inflammatory component linoleic acid.

11. Herbal hair masks can help with scalp issues like dandruff and itching by inhibiting the growth of bacteria and yeast on the scalp. This is because fenugreek saponins have antibacterial and antifungal effects.
12. Flaxseed contains vitamin E, which helps to prevent damage. It has been shown to minimise skin irritation and defend against free radicals. It not only adds shine but also promotes flexibility.
13. Curd in the hair mask also promotes healthy development by protecting the scalp from infections and illnesses. The biotin and zinc in curd help to strengthen the hair from root to tip, reducing hair loss. As a result, hair curd is a significant ingredient in encouraging hair growth.
14. It includes lecithin, which is also present in fenugreek. It is a natural emollient, which means it moisturises and softens your scalp, adds shine and softness to your hair, and strengthens it from root to tip. This helps to decrease dryness and breakage.
15. If your hair or scalp has been sunburned, aloe vera can aid since it protects against UV damage.
16. Flaxseed provides a potent combination of vitamins, minerals, and healthy oils, all of which contribute to:
 - i) The scalp is healed
 - ii) Stops hair loss
 - iii) Encourages hair growth
17. Aloe vera contains zinc naturally and promotes hydration. As a result, it can be used on those who have dandruff.
18. Because fenugreek includes potassium and iron, it helps to prevent premature hair loss.
19. Hair that is dry, damaged, or brittle need additional moisture and nourishment. Vitamins and antioxidants found in aloe vera include vitamin A, vitamin C, and vitamin E. These nutrients can help in hair growth.
20. Fenugreek seeds are also high in protein and niacin, which help prevent hair loss and dandruff as well as treat a variety of scalp issues such as dry hair, hair loss, and thinning hair.

Methodology

The formulation of herbal hair mask involves the following steps

1. Collection of herbal ingredients
2. Drying of collected herbs in direct sunlight.
3. Blending of the dried herbs.
4. Formulation of the herbal hair mask preparation by triturating all the blended herbs together.

The herbal ingredients like fenugreek and flaxseed were collected and dried in sunlight. Some plant material were purchased from the market. The herbal hair mask preparation was prepared on the basis of decided proportion by blending aloe vera gel and yoghurt along with the fenugreek seeds and flaxseeds which are soaked into the water. This material was mixed homogeneously in the mortar and pestle to form uniform paste. After the preparation of formulation of hair mask, evaluated by some parameters such as pH, determination of spreadability.

Facilities required

Electronic weighing balance
Beaker

Mortar and pestle Blender pH meter

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