



ALFAALFA - REVIEW ON A MEDICINAL USES

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ABSTRACT

Alfalfa, scientifically known as Medicago sativa Linn, is a perennial leguminous plant native to Asia, now widely cultivated in various parts of the world, including the United States. Known for its nutritional richness, alfalfa is particularly valued for its high content of vitamins, minerals, and protein, making it a popular choice in both agricultural and medicinal applications.[1][2] The herb has a long history of use in traditional medicine, with practices spanning from ancient Chinese and Ayurvedic healing to early American herbalism, where it was employed to address diverse health issues such as digestive disorders, arthritis, and anemia.[3][4]

The notable medicinal properties of alfalfa stem from its phytochemical composition, which includes antioxidants and anti-inflammatory compounds that may benefit various bodily functions. Research has suggested potential applications in managing conditions such as high cholesterol and anemia, as well as offering support for digestive and urinary health.[5][6] Furthermore, alfalfa is often used in herbal supplements, attracting attention for its ability to enhance overall health and nutritional intake.[4]

INTRODUCTION

Despite its benefits, the use of alfalfa is not without controversy. Concerns have been raised regarding its safety, particularly in certain populations, such as pregnant individuals and those with autoimmune disorders. Alfalfa sprouts have been linked to foodborne illness outbreaks caused by pathogens like *E. coli* and *Salmonella*, prompting caution among consumers.[7][8] Additionally, interactions with medications, particularly blood thinners, necessitate careful consideration before incorporation into dietary regimens.[9][10]

Alfalfa stands out as a multifaceted herb, recognized for its nutritional value and diverse health benefits. However, awareness of potential risks and the need for medical consultation is essential for those considering its use in a medicinal context, particularly given the complexities associated with its effects on health and safety.[11][12]

Botanical Description

Alfalfa, scientifically known as *Medicago sativa* Linn, is a perennial plant belonging to the pea family (Fabaceae). This deep-rooted herb exhibits a range of distinctive morphological characteristics. The plant typically grows to a height of 12 to 18 inches (30 to 45 cm) and features erect, smooth stems that may be either decumbent or erect, often branching at the upper parts. The leaves are trifoliate, with olive-green color and dimensions ranging from 10 to 45 mm long and 3 to 10 mm broad. The lower surface of the leaves is usually pubescent, while the upper surface is glabrous and coarsely toothed[1][2].

Alfalfa's flowers are arranged in loose heads and bloom from June to August. Each flower, about 1/3 inch long, is composed of five lavender or purple petals, with a green calyx that has five teeth. The flowering phase typically spans from July to September, following which the plant produces spirally coiled pods measuring approximately 3 to 10 mm in diameter and containing 2 to 6 seeds. These pods turn brown as they mature, with seeds that are generally yellow, castaneous, or brown, exhibiting an ovoid shape and a slightly bland taste[1][2].

The plant is native to Asia but has been widely cultivated across the United States, primarily in fields and roadsides, for various agricultural purposes, including fodder and cover cropping. Alfalfa is also recognized for its nutritional composition, being rich in organic minerals such as calcium, magnesium, phosphorus, and potassium, alongside a comprehensive range of vitamins and a high chlorophyll content[1][2].

Medicinal Uses

Alfalfa (*Medicago sativa*) has a rich history of traditional medicinal applications across various cultures. It has been used to address a range of health issues, benefiting from its nutritional profile and phytochemical properties.



TRADITIONAL APPLICATIONS

Chinese and Ayurvedic Medicine

In traditional Chinese medicine, alfalfa is recognized for its appetite-stimulating properties and as a treatment for digestive disorders, particularly ulcers.[3] Similarly, Ayurvedic practitioners have utilized alfalfa to alleviate symptoms associated with arthritis, manage fluid retention, and provide relief from ulcers.[3]

Early American Herbalism

Early American herbalists valued alfalfa for its versatility in treating numerous ailments, including arthritis, boils, and scurvy, as well as urinary and digestive system diseases. Additionally, pioneer women employed alfalfa as a remedy for menstrual disorders.[3] The herb was also noted for its effectiveness in addressing debility during convalescence and cases of anemia, with practitioners using it as a natural treatment for post-surgical infections and skin sores.[3]

Cough Treatment

In Colombia, the mucilaginous fruits of alfalfa are utilized in herbal remedies for cough relief, highlighting the herb's broad application in respiratory health as well.[3]

Nutritional Benefits

Alfalfa is notably rich in protein, vitamins, and minerals, contributing to its medicinal efficacy. It provides about 1.3 grams of protein per cup of sprouts, which is essential for tissue repair, enzyme production, and overall growth.[4] The herb is also a source of dietary fiber, aiding in digestion and maintaining bowel regularity, while its high vitamin K content supports bone health by enhancing mineral metabolism.[4]

Herbal Supplements

Alfalfa is available as an herbal supplement, offering various health benefits due to its nutrient density. It contains vitamins A and C, folate, copper, and manganese, making it a valuable addition to dietary regimens, especially for those seeking plant-based nutrient sources.[4]

Research Insights

Studies have demonstrated that alfalfa leaf protein can improve hemoglobin levels in anemic patients, suggesting its potential role in managing anemia.[5] Furthermore, its high digestibility and rich nutrient profile support its use as a dietary supplement for growth and development in various populations.[5] With its diverse applications, alfalfa stands out as a powerful herb in both traditional and modern medicinal practices.

Health Benefits

Alfalfa (*Medicago sativa*) is widely recognized for its numerous health benefits, attributed primarily to its rich content of vitamins, minerals, and alkaloids. Its medicinal properties extend to various bodily functions and ailments.

Nutritional Value and General Health

Alfalfa is a potent source of vitamins A, C, E, and K, as well as several essential minerals. The high concentration of alkaloids in alfalfa contributes to lowering cholesterol levels and managing blood pressure[6][13]. It is often used as a vitamin K supplement, which is particularly beneficial for nursing mothers as it aids in increasing milk supply[6]. Additionally, alfalfa has been noted for its role in remineralizing teeth and reversing tooth decay[6].

Digestive and Urinary Health

Alfalfa's alkaline properties render it an effective digestive tonic and laxative, promoting increased peristaltic movement within the gastrointestinal tract[6]. Its diuretic effects assist in the elimination of excess water from the body, making it valuable in treating urinary disorders such as dropsy and inflammation caused by urine retention[6]. Regular consumption of alfalfa may improve overall digestive health and boost the immune system, reducing occurrences of stomach distress[6].

Anti-Inflammatory and Immune Support

Research indicates that alfalfa possesses antioxidant and anti-inflammatory properties, which may help in modulating the immune system and improving growth performance in both humans and animals[11]. Studies have shown that alfalfa extracts can reduce inflammation markers in laboratory settings, demonstrating potential therapeutic benefits for conditions related to inflammation[7].

Other Potential Benefits

Alfalfa has been associated with various other health benefits, including the support of bladder and kidney health, management of cholesterol levels, and even potential benefits for breast cancer and other hormone-sensitive conditions due to its estrogen-like



effects[13]. However, caution is advised for individuals with autoimmune diseases or those taking immunosuppressive medications, as alfalfa may enhance immune activity and interfere with the efficacy of certain treatments[13][12].

Safety and Side Effects

Alfalfa is generally considered safe for most individuals; however, there are important safety considerations and potential side effects to be aware of. Some users may experience digestive discomfort, such as gas and bloating, primarily due to the herb's fiber content and complex sugars[14][15]. To mitigate these symptoms, it is advisable to start with a lower dose and gradually increase as the body adapts.

Drug Interactions

Alfalfa may interact with certain medications, particularly blood thinners and medications used for autoimmune diseases. The high vitamin K content in alfalfa can counteract the effects of blood-thinning medications such as warfarin, potentially increasing the risk of clotting issues[8][9]. It is crucial for individuals on such medications to consult with a healthcare provider before incorporating alfalfa into their diet.

Risks for Specific Populations

Certain populations should exercise caution or avoid alfalfa altogether. Pregnant individuals are advised against consuming raw alfalfa sprouts due to the risk of contamination with foodborne pathogens like *E. coli* and *Salmonella*, which can cause serious illness[7][8]. Additionally, individuals with autoimmune disorders, particularly lupus, may experience a resurgence of symptoms due to the immune-stimulating effects of the amino acid L-canavanine found in alfalfa[9][16].

Food Safety Concerns

Raw alfalfa sprouts have been linked to multiple outbreaks of food poisoning, with pathogens such as *E. coli* and *Salmonella* being the primary culprits. Symptoms can include diarrhea, stomach cramps, and fever, with severe cases requiring hospitalization[7][9]. To reduce the risk of foodborne illness, it is recommended to store alfalfa sprouts in the refrigerator, consume them promptly after purchase, and rinse them thoroughly before eating[9].

Long-Term Use Considerations

While some potential benefits of long-term alfalfa use include improved overall health and nutrient intake, there are risks associated with chronic consumption. Prolonged use may lead to adverse effects such as photosensitivity due to the high levels of L-canavanine[14][15]. Consequently, individuals are encouraged to discuss their health status and supplement use with their healthcare provider to ensure safety and effectiveness.

RESEARCH AND STUDIES

Overview of Research on Alfalfa

Alfalfa (*Medicago sativa*) has been the subject of various scientific studies that investigate its potential health benefits, particularly in relation to its medicinal properties. The National Center for Complementary and Integrative Health (NCCIH) actively conducts and supports research on complementary health products, including alfalfa and other herbs and spices, aiming to understand their efficacy and applications in health care [4]. Numerous institutions, such as the Botanical Research Institute of Texas and the Herbal Research Foundation, contribute to the ongoing exploration of alfalfa's uses [4].

HEALTH BENEFITS AND APPLICATIONS

Cholesterol Management

Research has highlighted alfalfa's potential in managing cholesterol levels. A study indicated that alfalfa could exhibit hypocholesterolemic effects, helping to reduce cholesterol and potentially improving cardiovascular health [13]. For high cholesterol, typical dosages range from 5-10 grams of the herb, or as a steeped tea taken three times daily, as well as liquid extracts [17].

Antioxidant Properties

Alfalfa is noted for its antioxidant properties, which may help combat oxidative stress and inflammation. Traditional practices in Ayurvedic medicine have utilized alfalfa for these benefits, although comprehensive clinical studies are still needed to solidify these claims [18].

Menopausal Symptoms

Some studies suggest that alfalfa may assist in alleviating menopausal symptoms, such as hot flashes, due to its phytoestrogen content. However, the extent of its effectiveness is not yet thoroughly researched, and potential risks associated with its use necessitate professional guidance [18].



Methodologies and Findings

Various methodologies have been employed in the research of alfalfa. For instance, randomized clinical trials have explored its effects on male infertility, comparing alfalfa seed powder combined with vitamin E to vitamin E alone [19]. Other studies have focused on its structural characteristics and their biological activities, revealing promising antioxidant and neuroprotective effects [19].

Safety and Recommendations

Despite the promising findings, it is crucial to approach alfalfa supplementation with caution. The content provided in studies and reviews is primarily for informational purposes and should not replace professional medical advice [11][10]. Patients and consumers are encouraged to consult healthcare providers before incorporating alfalfa into their treatment regimens, particularly if they are pregnant, breastfeeding, or taking medications, as adverse reactions can occur [10].

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