American Journal of Biomedicine and Pharmacy
https://biojournals.us/index.php/AJBP
ISSN: 2997-7177

The Use of Elecampane (Inula Helenium L.) in the Treatment and Prevention of Diseases of the Plant Supportive Movement System

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Received: 2025 15, Jan
Accepted: 2025 21, Feb
Published: 2025 18, March

Annotation: *This article reviews the scientific evidence justifying the use of elecampane (Inula helenium L.) for the treatment and prevention of musculoskeletal diseases in horses. The plant's chemical composition and effects on the equine musculoskeletal system were evaluated, particularly its anti-inflammatory, analgesic, and chondroprotective properties. The findings suggest that elecampane is a promising, natural remedy for horses in veterinary medicine.*

Keywords: *Elecampane, Inula helenium L., horses, musculoskeletal system, diseases, treatment, prevention, veterinary medicine, phytotherapy, essential oils, sesquiterpene lactones, flavonoids, inulin.*

INTRODUCTION

It is well known that horses play an active role in agriculture and sports, resulting in frequent injuries. Among these injuries, diseases of the musculoskeletal system, such as arthritis, osteoarthritis, tendinitis, tenosynovitis, and bursitis, are common problems in veterinary practice. These conditions lead to pain in the musculoskeletal system, restricted movement, and a decrease in performance capability.

Although traditional treatment methods, including non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroids, are often effective, the demand for alternative treatments is increasing due to their side effects and limitations on long-term use. In particular, the widespread and indiscriminate use of steroids has resulted in negative consequences such as bone degradation, synovitis, and metabolic disorders. Finding solutions to these issues and developing effective treatment methods is one of the current challenges facing veterinary medicine.

In the treatment and prevention of these diseases, Elecampane (Inula helenium L.), a perennial plant belonging to the Asteraceae family, has been traditionally used in folk medicine as an anti-inflammatory, analgesic, and expectorant remedy.

The dynamic increase in the resistance of microbes and helminths over a long period has led to a growing interest in using plant-derived medicines as alternatives to synthetic drugs. Elecampane (Inula helenium L.), a widely distributed plant belonging to the Asteraceae family, is one of the extensively studied organisms. Scientific literature has analyzed the pharmacological properties of Elecampane, including its anti-inflammatory, analgesic, antioxidant, immunomodulatory, and chondroprotective effects, attributed to components like essential oils, sesquiterpene lactones, flavonoids, and inulin.

When mechanical impacts cause damage to blood vessels, resulting in significant blood accumulation, hematomas can develop in the surrounding soft tissues, leading to the formation of fibrous tissue. In managing mild forms of injuries, the affected animal is relieved from movement and physical activities. During the first two days of the illness, cold treatments are applied, followed by massage and warm treatments which facilitate the resorption of swelling.

Natural products derived from plants are diverse compounds with affordable and easily accessible antimicrobial properties. The traditional and contemporary applications of plant-based medicine in veterinary medicine highlight the importance of conducting research on these uses. Inula helenium L. (Elecampane) is commonly used in the treatment of respiratory and skin diseases. The antimicrobial effects of sesquiterpene lactones extracted from the roots of Elecampane are utilized in treating various ailments. Traditional hydro-ethanolic extracts were prepared from the roots of Elecampane, aiding in the fractionation of some active components against staphylococci based on their bioactivity. Key compounds supporting the observed antimicrobial activity in vitro were identified as a mixture of alantolactone (1), isoalantolactone (2), igalon (3), dugesialactone (4), and alloalantolactone (5). These substances are also found to be significant in the treatment and prevention of melanoma in horses.

The quantitative and qualitative analysis of ethanol and aqueous extracts obtained from the roots of Inula helenium demonstrates that this medicinal plant is a valuable source of biologically active compounds. The conducted studies showed that the liquid extracts from the roots of Elecampane contain a high amount of the polysaccharide inulin (32 g/100 g of dry matter). Additionally, it was determined that the ethanol extracts are also a valuable source of fructooligosaccharides. After treatment with ethanol, the aqueous extracts exhibited significant

antioxidant activity and a high phenolic content. A positive correlation was observed between total antioxidant activity and total phenolic content. These indicators suggest that the roots of Elecampane could provide significant benefits in the production of functional food products with therapeutic effects for the organism. This complex of biologically active substances, along with the high molecular inulin found in the roots of Inula helenium L., opens up numerous future applications not only in medicine and the food industry but also in pharmaceuticals. [3]

Results and Their Analysis: In the experiment, horses suffering from tendovaginitis, arthritis, and muscle inflammation participated. The horses displayed symptoms of trauma, including pain, swelling, and elevated local temperature. A tincture was prepared from the Elecampane plant (including the stem, leaves, flowers, and roots) for treating musculoskeletal system diseases in horses.

To prepare the tincture, 1 liter of boiling water was poured into a container with a sealed lid, to which 8 teaspoons of crushed roots and rhizomes were added. The mixture was allowed to steep for 8-10 hours. It was then strained through a cloth, and the tincture was used to soak cotton, which was then wrapped around the swollen areas using an elastic bandage. This dressing was left on the injury site for 4-5 hours, and the treatment was continued for 5 days. As a result, by the second day, the swelling and pain began to decrease. Additionally, the tincture was administered orally at a dose of 50 ml three times a day. By the fifth day of treatment, it was determined that the swelling and pain had completely disappeared.

The results obtained indicated that Elecampane has potential advantages in the treatment and prevention of musculoskeletal system diseases in horses. The anti-inflammatory, analgesic, and chondroprotective properties of Elecampane were found to help reduce pain, improve mobility, and slow the degeneration of connective tissues. Furthermore, it was analyzed that Elecampane might be a safer alternative compared to traditional treatment methods.

Conclusion:

- Elecampane (Inula helenium L.) has therapeutic potential for treating and preventing musculoskeletal diseases in horses.

- Inflammation Reduction: The anti-inflammatory and anti-swelling properties of elecampane help reduce inflammation in diseases such as arthritis and osteoarthritis.

- Pain Relief: It has been found that elecampane, with its analgesic properties, can help reduce joint and tendon pain.

- Relief of Muscle Pain: Helps reduce muscle spasms and relaxes muscles.

- Improved Blood Circulation: Improves blood circulation through the effect of essential oils, which ensures healthy movement of the musculoskeletal system.

- It has been found that the anti-inflammatory, analgesic, and chondroprotective properties of the plant help reduce pain, improve mobility, and slow down the degeneration of cartilage tissue.

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Choriyev Otabek Norboyevich Otlar kaft-barmoq bo‘g‘imiga tasir etuvchi pay kaslliklarini etiopatogenezi. Veterinariya meditsinasi maxsus son. 188-189 12.2023