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Therapeutic Properties of Elecampane (Inula Helenium L.) in the Treatment of Equine Skin Diseases

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Annotation: *This article explores the therapeutic potential of elecampane (Inula helenium L.) in treating equine skin diseases. The chemical composition and pharmacological properties of elecampane, particularly its anti-inflammatory, antimicrobial, and regenerative effects, were analyzed. Existing research confirms the positive effect of elecampane extract on horse skin, suggesting its potential application in veterinary practice.*

Keywords: *Elecampane, Inula helenium L., horses, skin diseases, treatment, veterinary medicine, phytotherapy, Asteraceae, in vitro, in vivo*

INTRODUCTION

For centuries, plants have been used to prevent and treat a variety of diseases in humans and animals. However, the development of chemistry and pharmaceuticals in the 19th and 20th centuries led to significant advancements in veterinary medicine as well. As a result, treatment with chemical substances and synthetic drugs intensified. It was discovered that these substances could cause secondary diseases due to their cumulative, hemopoietic, and immune system-damaging effects on the body. In recent decades, interest in herbal remedies and traditional medicine has increased significantly, leading to the beginning of a "Return to Nature" trend. Medicinal plants exhibit a variety of therapeutic effects, such as anti-inflammatory, antioxidant, anti-proliferative, antiviral, and antimicrobial properties. Currently, 20-25% of modern medicines are derived from plants, with medicinal plants and their biologically active compounds being widely used, especially for long-term use, as much safer and healthier substitutes for synthetic drugs.

Skin diseases in horses are one of the most common problems in veterinary practice, especially negatively affecting the health, working ability, and development of sport horses. While traditional treatment methods, including antibiotics, non-steroidal anti-inflammatory drugs, and corticosteroids, are often effective, there is a risk of side effects, especially resistance and effects on the immune system. [9,10]

Therefore, it is important to develop and implement natural and safe alternative methods for treating and preventing skin diseases in horses. Elecampane (Inula helenium L.) is a perennial plant belonging to the Asteraceae (Compositae) family, and has long been used in folk medicine as an anti-inflammatory, antimicrobial, antiseptic, and skin-regenerating agent for treating equine skin diseases (allergic dermatitis, dermatitis, eczema, photosensitization). [8]

Literature Review: The Inula helenium plant consists of long, thick roots and short, thick, multi-headed rhizomes. The roots and rhizomes are 2-20 cm long and 1-3 cm thick, covered with a wrinkled, grayish-brown bark. The inside of the product is yellowish-white and contains shiny, brownish-colored parts that contain essential oils. The product is brittle and does not break evenly across. The root and rhizome have a characteristic fragrant, strong odor and a bitter, pungent taste. [1]

Hydrodistilled essential oil in Inula helenium and its bactericidal activity and effect on the cell membrane of Staphylococcus aureus: Detailed chemical studies were conducted to identify the most active oil from the roots of Inula helenium L.

Inula helenium L. (family Compositae) is a perennial plant species native to Europe and East Asia. In Serbia, it is a widespread plant and is used in folk medicine mainly to treat respiratory diseases such as asthma, bronchitis, and whooping cough, as well as digestive diseases, urinary tract infections, and skin diseases. [2, 3]

Studies on elecampane have shown that the antistaphylococcal effect of the crude extract of I. helenium remained effective six months after the initial extraction. The essential oil of the roots of I. helenium L. mainly consists of alantolactone, isoalantolactone, and b-elemen. The overall yield of the essential oil obtained using the supercritical technique was 1.7% by weight relative to the material charged in the extractor. [3, 7]

The dried root powder of the elecampane plant was extracted in ethanol (using 30%, 50%, and 70%). Antimicrobial activity was tested in five potential pathogenic bacterial species (Bacillus

subtilis, Bacillus cereus, Enterococcus faecalis, Escherichia coli, Staphylococcus aureus) and four fungal species (Candida albicans, C. parapsilosis, C. lipolytica, and Aspergilluinter). Antimicrobial activity was studied using the drop-diffusion test method. [4, 5, 6]

Botanical Description and Chemical Composition of Elecampane: Detailed information is provided on the growing areas, morphological characteristics, and chemical composition (essential oils, sesquiterpene lactones, flavonoids, inulin, etc.) of elecampane.

Studies on the effect of elecampane on horse skin: Based on scientific data on the pharmacological properties of elecampane: Anti-inflammatory, antimicrobial, antifungal, antioxidant, and immunomodulatory effects, treatment methods have been developed based on the causes of equine skin diseases (bacterial, fungal, parasitic, allergic, etc.), and clinical signs (itching, redness, rashes, sores, scaling, etc.).

In vitro studies: A decoction extract was prepared from the root of the elecampane plant, and the results of studying its effect against microorganisms that cause equine skin diseases are analyzed.

In vivo studies: The results of studying the effect of elecampane extract on skin diseases in experimental animals, i.e., white mice and rabbits, are reviewed and analyzed.

Clinical studies: Elecampane-based preparations were prepared in various ways and forms (ointment, decoction, infusion, powder, lotion) and tested in the treatment of skin diseases in horses. Of these dosage forms, the affected skin was washed with an infusion 2 times a day for 7 days, and as a result, itching and inflammation began to heal after the 3rd day, and by the 7th day, the signs of dermatitis had completely disappeared. The effectiveness of the results obtained was studied and analyzed.

Conclusion:

The results obtained were analyzed and the potential benefits of elecampane in the treatment of equine skin diseases are discussed. It was found that the anti-inflammatory, antimicrobial, and regenerative properties of elecampane help to reduce the clinical signs of skin diseases and accelerate the healing process. It was also found that elecampane is a safe, effective, and alternative treatment method compared to traditional treatments.

- It was reiterated that elecampane (Inula helenium L.) is one of the therapeutic agents with potential for treating equine skin diseases.

- It was proven that the anti-inflammatory, antimicrobial, and regenerative properties of the plant help reduce the clinical signs of skin diseases and accelerate the healing process..

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