EXPLORING THE THERAPEUTIC POTENTIAL OF CORIANDER ESSENTIAL OIL IN ZEBRAFISH MODEL WITH COGNITIVE IMPAIRMENT

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Actuality. Viruses of lower vertebrates recently became a field of interest to the public due to increasing epizoot. The essential oil extracted from Coriandrum sativum has been acknowledged for its wide range of pharmacological characteristics, encompassing antioxidant, antimicrobial, antibacterial, antifungal, antidiabetic, anticonvulsant, anxiolytic-antidepressant, and anti-aging properties.

Aim. The primary objective of this investigation was to explore the therapeutic mechanism of Coriandrum sativum var. microcarpum essential oil (CSEO) in alleviating cognitive dysfunction and cerebral oxidative stress utilizing a zebrafish model induced by scopolamine (SCOP).

Materials and Methods. Zebrafish were exposed to various concentrations of CSEO (25, 150, and 300 µL/L) over a period of 21 days, coupled with the administration of SCOP (100 µM) to induce cognitive dysfunction. The evaluation of behavioral responses was carried out through the utilization of the Y-maze and novel object recognition (NOR) tests, aiming to assess spatial memory, novelty responsiveness, and memory recognition. The assessment of anxiety-related behavior was conducted utilizing the novel tank diving test (NTT). Furthermore, the investigation included the analysis of the cholinergic system's activity and the measurement of brain oxidative stress markers.

Results and Conclusions. Our results demonstrated that the administration of SCOP led to impaired memory and anxiety-like behavior in zebrafish, whereas the utilization of CSEO notably enhanced memory function in behavioral assessments. Moreover, the application of CSEO mitigated the brain oxidative stress induced by SCOP and reduced the activity of acetylcholinesterase (AChE).

The outcomes of this research offer significant perspectives on the potential therapeutic impacts of CSEO in alleviating memory impairments and cerebral oxidative stress linked to dementia. The investigation highlights the encouraging function of CSEO as a natural solution for alleviating cognitive dysfunction and conditions related to oxidative stress.

PREVENTION OF HOOF ONYCHOMYCOSIS IN HORSES

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Actuality. The problem of onychomycosis as a type of superficial mycosis continues to be relevant in veterinary medicine. The most serious diseases that can affect the hoof are those that disrupt the integrity of the stratum corneum or its connection with the living tissues of the hoof. The most severe are laminitis and fungal infection of the white line - onychomycosis.

Onychomycosis is an infectious disease of a fungal nature. The disease is caused by mold or yeast fungi, or dermatophytes.

Onychomycosis in horses, a disease of the hoof, which is deformed and becomes brittle.

In medical terms, onychomycosis is a disease of the lamina. It is a form of oncopathy caused by pathogenic fungi. The most important risk factor for its development is the weakening of the cellular part of the immune system.

The treatment of hoof onychomycosis in horses remains a very difficult task at the moment.

Aim is to investigate the prevention of onychomycosis in horses.

Materials and methods. According to the literature review, the most effective methods for the prevention of onychomycosis disease and re-emergence of animals were determined.

Results. The analysis of the literature showed that preventive measures for onychomycosis are aimed at reducing the risk of hoof disease in horses that have not yet had onychomycosis. They are also necessary for animals that have already suffered an infection to prevent relapse and re-infection.

Onychomycosis is a fungal disease that affects the stratum corneum, especially the white line. At the time of discovery, the fungus was called *Achorion Keratophagus*. According to the new classification, it is called *Tricophyton* - a dermatophyte fungus that parasitizes the skin and tissues. The structure of the white line does not differ along its entire length, but according to statistics, the fungus penetrates it precisely in the area of the hook. Perhaps the hook is the most vulnerable point of the white line. Damage or detachment of the white line can occur due to excessive stress, which may be due to imbalance during clearing, a weak hoof (the hock is physiologically the most stressed area), improper use of iron - especially the use of nails that are too large or too large, which creates a wedge effect, or more serious problems inside the hoof, such as laminitis.

The cause of onychomycosis is quite simple: dampness. Dampness in the stall, dampness in the field at grazing. What does this mean? The stall must be thoroughly treated. Put in dry sawdust, and remove the old one. With the field, everything is quite clear: nothing can be done.

Of course, the fungus needs to be neutralized with antifungal drugs, but this is not easy to do because the hoof wall prevents it. There are two possible ways. The first is to leave the fungus inside the hoof, trying to achieve the effect by washing it. This method is called "preservation" because it tries to clean the inside of the fungus by applying a tincture of iodine, copper sulfate (copper sulfate), hydrogen peroxide, or antifungal drugs to the outside.

In most cases, the disease can be prevented. It is enough to properly unhook the hooves and monitor the condition of the white line when forging or clearing.

Hoof treatment with copper sulfate (the most effective remedy). 1 liter of water contains 10-15 grams of sulfate. The horse's hoof is immersed in the solution for 3-5 minutes. How many days to repeat depends on the season.

If it is a hot summer, then less often: every 3-5 days for 2-3 repetitions. If it is a wet spring/autumn, then more often: once every 2-3 days for 4-5 repetitions. If the horse does not allow you to put your foot in a bucket or basin, you can wet a towel so that the horse can step on it.

Conclusions. With onychomycosis, it is very important to prevent the infection from spreading to healthy areas of the hoof.

The animal body has protection against fungal infections formed at the level of innate immunity. However, a number of features of fungal structure and vital activity contribute to evasion of the host's immune response, which avoids the development of inflammation and promotes fungal adaptation. In addition, there is evidence of the formation of biofilms by fungi, which facilitate their reproduction and also protect them from antimycotic drugs. Thus, the problem of onychomycosis, its etiopathogenesis, treatment and prevention remains relevant in veterinary medicine. To date, the

arsenal of antifungal agents is actively expanding, which includes both antimycotic drugs and their combinations with physiotherapeutic methods.

NOVEL INSIGHTS ON THE OKADAIC ACID-INDUCED ZEBRAFISH MODEL OF ALZHEIMER'S DISEASE AND THE ANTI-DEMENTIA POTENTIAL OF SOME NATURAL BIOACTIVE COMPOUNDS IN THE ANIMAL MODEL

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Actuality. Dementia is a clinical syndrome mostly known for the cognitive deficits that patients display. Among the four types of dementia described, Alzheimer's Disease (AD) stands out as the most prevalent. The annual surge in AD cases puts great pressure on the global healthcare systems, resulting in a tremendous increase in costs. As a result, the World Health Organization has prioritized AD in medical research and calls for novel strategies to treat or at least halt AD's progression. In its complex pathogenesis, dementia remains poorly understood and currently incurable. In-depth studies based on relevant animal models could help uncover the mechanisms behind AD and lead to the development of innovative anti-dementia treatments. However, existing animal models lack the complete pathology of AD in humans, making it imperative to continuously develop more relevant models. The okadaic acid-induced zebrafish model of AD is the newest zebrafish model of AD and has a unique combination of AD-like symptoms that are not present in any other animal model. It is known to manifest cognitive deficits and the major molecular hallmarks of AD, namely the deposition of amyloid beta plaques and neurofibrillary tangles, and is also time-cost effective. Therefore, more studies are crucial to consolidate this animal model, which is pivotal in discovering groundbreaking anti-AD drugs. A great resource for anti-AD drug candidates resides in plants used in traditional medicine.

Aim. First, this study aimed to further delve into the intricacies of the okadaic acid-induced zebrafish model of AD. Another aim was to explore the anti-dementia potential of mansorin A, mansonone G, and 6-paradol using this animal model. This study contributes significantly to the quest for better animal models of dementia and advances the field of neuroscience in the ongoing pursuit of novel therapeutic interventions for dementia.

Materials and methods. Okadaic acid (OKA) was administered at a concentration of 10 nM to zebrafish for four days to induce the animal model. Wild-type zebrafish were used in this study. Mansorin A (MA), mansonone G (MG), and 6-paradol (PD) were purified from containing plants and then chronically administered *via* immersion each in three concentrations: 1, 3, and 6 µg/L to healthy zebrafish and the animal model. To assess the anti-dementia potential of MA, MG, and PD and to further explore the pathology of the okadaic acid-induced zebrafish model, a combination of *in vivo*, *in vitro*, and *in silico* approaches was used. The short-term spatial memory in the experimental groups was assessed in the Y-maze task and the short-term recognition memory was verified in the Novel Object Recognition test. The anxiety-like state was assessed in the Novel Tank Diving Test and the Novel Object Approach Test. The behavior of the animals in these tasks was tracked with the ANYmaze® v. 6.3 software. Following, a battery of biochemical tests was conducted to investigate the levels of some oxidative stress markers (reduced glutathione, catalase, carbonylated proteins, and malondialdehyde) and the level of acetylcholinesterase in the zebrafish brain. The data obtained after behavioral and biochemical analysis was statistically interpreted using GraphPadPrism v. 9.2.0. The