

The effectiveness of turmeric use in the therapy of chronic inflammation associated with paresis and paralysis in dogs

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Turmeric, the active extract of *Curcuma longa*, has a particular impact on articular rheumatism, cardiovascular diseases, asthma, bronchitis, colitis. It is the most powerful natural anti-inflammatory and is completely devoid of the side effects of anti-inflammatory drugs. It also has an antioxidant role in fighting chronic inflammation. We used turmeric as an anti-inflammatory in the treatment of paresis or paralysis in 15 dogs of different breeds and ages, who were brought for treatment to our FMVB Clinic between January and December 2017. After the clinical and neurological examination, the patients were diagnosed with toracolumbar vertebral column disorders. Pathology was traumatic, herniated disc, spondylosis. 26.6% of the patients required surgery while the remaining 73.3% only required medical treatment. The patients received appropriate treatment for each condition, sharing turmeric at the dose of 1 g/ 10 kg/ day for several months to combat chronic inflammation. The anti-inflammatory effect was observed 20 to 30 days after the start of treatment, all patients recovering gradually after 3 days to 3 months. 20% of patients have experienced the reappearance of neurological signs, which resolved in 7 to 10 days after dose increase by 0.5 g/10 kg/day.

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In vitro cytotoxic effect on human dermal fibroblasts of inorganic-organic hybrids based on glycyrrhetic acid and hydrotalcite

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Glycyrrhetic acid (GLY), deriving from licorice root, is provided for anti-inflammatory, antiseptic and skin regenerating activities. Despite the interesting applications in healthcare, GLY use is limited due to very low solubility/dissolution. In order to solve this problem, it was intercalated in two kinds of hydrotalcites obtaining the hybrids ZnAl-HTlc-GLY and MgAl-HTlc-GLY then introduced in the gelled water phase of an oil in water emulgel and the obtained formulations characterized.

The rheological studies highlighted that the hybrids improve the formulation flow properties. The Franz diffusion cell was used for the *in vitro* release studies using a mixture of acetate buffer pH 5.0: ethanol (50:50 v/v) as acceptor medium and working at 32 °C to reproduce the skin surface temperature. The obtained results demonstrated the enhanced dissolution of GLY deriving from emulgels containing ZnAl-HTlc-GLY and MgAl-HTlc-GLY vs the emulgel containing crystalline GLY (used as control).

In order to evaluate the safety of application on skin of the developed formulations *in vitro* cytotoxicity experiments on der-

mal fibroblasts were performed. The preliminary results showed that MgAl-HTlc-GLY does not impair seriously cells viability as well as ZnAl-HTlc-GLY which proved to be toxic.

These data suggest that the emulgel based on MgAl-HTlc-GLY is the most promising.

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Investigation of antibacterial and antioxidant activities of various algae species

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Microalgae are considered as the actual producers of some highly bioactive compounds found in marine resources. The aim of this study was to investigate antioxidant and antibacterial activities of extracts of macroalgae: *Ulva lactuca* and microalgae: *Chlorella vulgaris*, *Chlorella minutissima* and *Chlorella protothecoides*, extracted in DMSO, against bacteria: *Mycobacterium smegmatis* RUT, *Morganella morganii* ATCC 25830, *Proteus mirabilis* BC 6624 and *Aeromonas hydrophila* ATCC 7965. *In vitro* antimicrobial activity tests evaluated by agar disc diffusion assay method revealed that all of the extracts of algal species had antimicrobial effects against the pathogens. The strongest antibacterial activity among all algae species was determined against *Aeromonas hydrophila*. *C. vulgaris*, *C. minutissima* and *U. lactuca* showed stronger antibacterial activities against bacterial strains, compared to *C. protothecoides*. *C. vulgaris* at concentration of 40 µl/petri showed the strongest antibacterial activity against *A. hydrophila* with the inhibition zone 21.66 ± 4.36 mm. The total antioxidant activity of extracts was investigated with 1, 1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging method. Extract of *C. protothecoides* was determined to have a stronger antioxidant activity than those of *C. minutissima* > *C. vulgaris* > *U. lactuca*. It can be concluded that the algae extracts might be evaluated for the production of natural antimicrobials and antibiotics for food and pharmaceutical industry.

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Plant biotechnology

Assessment of cisgenic bread wheat lines carrying class I chitinase gene to leaf rust

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Wheat resistance to fungal pathogens is a complex mechanism involving expression of fungal cell wall-degrading enzymes, such as chitinase. Thus, introduction of constitutively expressed chitinase gene into wheat variety might alter resistance to fungal pathogens.

Eight cisgenic lines of bread wheat cv. Saratovskaya 29 carrying wheat class I chitinase gene were studied for resistance to leaf rust.