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| **EFFICACY OF *CHANNA STRIATUS* BLOCH AQUEOUS EXTRACT AND ZERUMBONE IN ALLEVIATING INDUCED KNEE OSTEOARTHRITIS IN RATS** | | | | Thesis Title |
| 2011 | | | | Year |
| The aim of this study was to evaluate the chondroprotective effects of two natural remedies, aqueous extract of *Channa striatus* (CS) and crystalline zerumbone purified from the rhizomes of *Zingiber Zerumbet* Smith, on experimentally induced knee osteoarthritis (OA) in Sprague-Dawley rats. Preliminary study was implemented to determine the effective method for the induction of OA in the knee joints of rats prior to the treatment. Accordingly, monosodium iodoacetate (MIA) was selected to achieve the experimental knee osteoarthritis in rats.  Evaluation of OA changes following 4 weeks of treatment was done through macroscopic and microscopic examinations supported with radiography to the knee joints. The immunoreactivity in the synovial membranes was evaluated with the aid of immunohistochemistry (IHC) study using the immunofluorescence technique. The study showed improved density of the following neuropeptide nerve fibers: protein gene product (PGP) 9.5, calcitonin gene-related peptide (CGRP) and neuropeptide Y (NPY). Anti-inflammatory property of CS extract and zerumbone was assayed through estimation of serum prostaglandins E2 (PGE2) and F2α (PGF2α) concentrations using the enzyme immunoassay kits, to ascertain their positive effect on the OA joints. The concentrations of the prostaglandins were determined during three periods that is before and during OA periods and after 4 weeks of the treatment. For the zerumbone treatment group, some phase I and phase II hepatic metabolizing enzymes (cytochrome P450, glutathione *S*-transferase) and oxidative stress biomarkers (malondialdehyde, glutathione) were determined to explore hepatic status after treatment.  Following 4 weeks of the treatment with 10 ml/kg of the aqueous CS extract and 2ml/kg of zerumbone, histopathological changes of joints articular cartilages decreased and the immunoreactivity in the synovial membranes improved. The OA changes decreased significantly in zerumbone-treated rats. This difference may be due to the dual anti-inflammatory and antioxidant properties of zerumbone, while the CS extract only has the anti-inflammatory property. Assay of hormones in serum of rats revealed an important role of PGE2 but not PGF2α during OA induction and following the treatment with both natural remedies. In conclusion, both CS extract and zerumbone have obvious improved effect against experimentally induced knee OA in rats, but with zerumbone producing markedly different effect. The safety profile of zerumbone shown by the absence of oxidative stress suggests an opportunity to study the possibility of using this compound at higher dosage regimen and/or longer duration of for the treatment of OA or other disease. | | | | Abstract |