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Phytochemical Components Cure Osteoarthritis (OA) -Related Diseases

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Osteoarthritis (OA) is the most difficult joint condition on the planet. It affects a range of joints across the body and is a leading cause of disability, with the population aging. Musculoskeletal system illness, degenerative bone disease, and degenerative arthritis are all terms used to describe OA. Although the exact mechanism of OA is unknown, it is thought to be mediated by several mediators including TNF, Interleukin (IL), Matrix Metalloproteinases (MMP), and inducible nitric oxide synthase, and C reactive protein. The pillars of this alternative medicine include herbal remedies and various therapeutic procedures. The great majority of herbal bioactive substances or phytochemical components are beneficial in disease prevention and have little or no negative side effects.

Phytochemical components that affect molecular mechanisms and gene expression to increase the osteoprotection and treat OA-related disorders. Because of the medicinal plant's effectiveness, researchers conducted this study to see if inducing Monosodium Iodoacetate in rats helps pain management and joint function.

The DA plant material (850 g dwt.) was crushed in a blender and extracted for 24 hrs with a 70% ethanolic solvent. Whatman® No. 1 Filter paper was used to filter out the solvent. A rotary evaporator with reduced pressure was employed to concentrate the collected solvent. The resultant residue was preserved at 4 degrees Celsius for subsequent analysis. A chromatographic method was used to extract the ethanolic extract of DA. For this study, male Lewis rats weighing 160-180 g were obtained from the Institution's Central Animal House. The MIA induction rats were divided into six groups, each consisting of six rats (n = 6). These tests lasted seven, fourteen, twenty-one, and twenty-eight days. In terms of the number of tests, all data collection and analysis were expressed as mean SD.

Various dose levels, such as 100, 200, 300, 400, and 500 mg kgG1, were used in the toxicological study. The test animals were found to be normal during the 24 hrs evaluation period, and no mortality was detected. An examination of the behavioural activity connected with movement concludes the open-field test. The locomotor function and motor coordination of the drug-administered mice were measured using the rotarod method. In this investigation, the time it took the mice to drop off the rod was monitored during a maximum observation time of 5 min. The hotplate test is used to assess the examined animals' thermal hyperalgesia. In this study, the withdrawal reaction to heat stimulation was shown to be low in groups III, V, and VI. These plant-based bioactive compounds are important in the treatment of a variety of ailments. The several modes of action can be used alone or in combination

with other drugs, and they are diverse. Finding the plants that have been employed in traditional medical systems around the world, examining their phytochemical components, and explaining whether and how their bioactive metabolites may affect the recognized therapeutic potential are all fascinating challenges. In this study, the concentrations of TBARS, GSH, SOD, CAT, and GPx in tissue cells of tested animals were examined. Lipid peroxidation levels were significantly lowered in groups treated with DA but significantly elevated in group II animals after MIA treatment compared to the control group.

The substantial ethnopharmacological effects of the phytochemical component, which is present in the DA extract, have been linked to its important involvement in the molecular mechanism and protection against exposure in models. The findings of this investigation demonstrated that the experimental animal model responds favourably to DA extracts.

JOURNAL REFERENCE

Wu, Y., Y. Chen, Z. Xu and M. Xiang, 2022. *Dipsacus asperoides* extract improves physiological behaviour and controls oxidative stress produced by a rat model of osteoarthritis. Int. J. Pharmacol., 18: 598-610.

KEYWORDS

Dipsacus asperoides, osteoarthritis, physiological behaviour, oxidative stress, animal model