A Novel Formulation of Curcumin and 3-O-Acetyl-11-Keto-Beta-Boswellic Acid Enriched Boswellia Extract Ameliorates Experimentally Induced Osteoarthritis in Rats

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Objectives: Osteoarthritis (OA) is a chronic musculoskeletal disorder of knee joint, characterized by inflammation and cartilage damage. Current therapeutic approaches for osteoarthritis directed at amelioration of symptoms are associated with clinically significant adverse events upon long-term use. We evaluated a formulation provided by OmniActive Health Technologies that contained combination of highly bioavailable form of curcumin (Curcuwin ultra+) and 3-O-Acetyl-11-keto-beta-Boswellic acid (AKBA) enriched Boswellia extract in monosodium iodoacetate (MIA)-induced knee OA in rats.

Methods: Thirty-five female rats were distributed into five groups groups: Control, OA, OA + CA (Curcuminoids + AKBA 15 mg/kg), OA + UCII (4 mg/kg) and OA + Move Free advanced Glucosamine and Chondroitin (197 mg/kg). OA was induced by a single administration of MIA into right knee joint through the infrapatellar ligament and followed by treatment for 4 weeks. Animals were evaluated for various biochemical, radiological, histopathological and protein expression for various inflammatory and catabolic markers involved in the biology of OA.

Results: Monosodium iodoacetate induced OA in rats after two weeks of administration. All the three treatment CA, UCII and Move Free formula exhibited an anti-arthritic effect after 4 weeks of treatment with significant ($P < 0.05$) reduction of both serum and joint tissue TNF-α, IL-1β, IL-10, cartilage oligomeric matrix protein and additionally C-reactive protein in the serum of OA rats. We also observed an overall reduction of oxidative stress with significant ($P < 0.05$) reduction of lipid peroxidation, and increased antioxidant activities with SOD, GSH-Px and CAT levels in response to treatment in OA animals associated with improved histological structure of the knee joint of OA rats along gross improvement of joint architecture.

Conclusions: The novel formulation of Curcuwin ultra+ and AKBA provided protective effect against osteoarthritis possibly due to anti-inflammatory and anti-oxidant activity in experimentally induced OA in rats with comparable activity to extensivley used supplements against OA in the market such as UCII and Move Free formula and could serve an effective alternative treatment option against OA.

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