Natural Mineral Supplementation Provides Chondroprotection and Hence Improvement in Moderate Osteoarthritis of Knee

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Abstract: The primary objective of the study was to determine if natural mineral supplements (Concentrate Trace Mineral Drops CTMD®) can act as chondroprotective agent by determining the WOMAC score, 6 minutes pain free walking distance (MWD) and need for rescue pain medication. Methodology: A double blind, placebo controlled randomized study in 100 patients with moderate Osteoarthritis of the knee joint was carried out. 40 drops of naturally occurring mineral supplement (CTMD®) was administered per day to the test group. Efficacy was objectively confirmed by evaluating changes in the thickness of articular cartilage, joint space width and synovial fluid composition. Results: Significant differences in WOMAC scores (reduction of 16.2 vs 7.1) and 6 MWD (122 feet vs 46 feet) in the CTMD group as compared to the placebo group was observed at 24 weeks. Ultrasonography and synovial fluid examination revealed improvement in cartilage structure. The treatment was well tolerated and the adverse event profiles were not significantly different between the two groups. Conclusion: This preliminary study suggests that CTMD improves joint health and hence increases walking distances and allows partial withdrawal of NSAIDs in subjects with Osteoarthritis of the knee.

Introduction: Minerals are of vital importance for most body functions and even small departures from the normal mineral composition of the interior of the cell may have profound physiological consequences. There is fast growing evidence that minerals and trace elements like Boron, Zinc, Copper, Selenium, Magnesium, Manganese, Vitamins A, E and C, Niacin, Pantothenic Acid, Omega 3 fatty acids, Chondroitins, Glucosamine, Collagen, Hyaluronic Acid and Sulphur containing amino acids play a significant role in the production of cartilage matrix. Naturally occurring minerals such as Magnesium, Copper, Manganese, Selenium and Zinc have shown anti inflammatory effects in both animal and human studies. In a rat model of Osteoarthritis, a deficiency of dietary Magnesium was demonstrated to enhance the amount of cartilage damage. Furthermore, increased Magnesium in the diet may influence inflammation through reducing the serum level of the pro-inflammatory protein C - reactive protein. Also, naturally occurring minerals are known to play a major role as cofactors. Copper is one such essential cofactor of the Collagen cross-linker lysyl oxidase. Recent evidence has suggested an excess of reactive oxygen species arising from an imbalance in the antioxidant status of the joint may result in cartilage degradation and joint remodeling. Anti-oxidant enzyme Super Oxide Dismutase requires Copper, Zinc and Manganese as cofactors. It was demonstrated in the Haqqi model of human cartilage explants that mineral supplementation reduced cartilage degradation in response to IL-1β, as well as Nitric Oxide production secondary to the induction of inducible Nitric Oxide Synthase.

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