

Protection and Prevention of Cartilage Damage in Rat Knee Osteoarthritis by Arnebia Euchroma Extract

Soheil Ashkani Esfahani MD; Bart Lubberts MD; Rohan Bhimani MBBS

Shiraz University of medical sciences, Shiraz, Iran

Purpose: Osteoarthritis (OA) is a chronic disease and a significant cause of joint pain, tenderness, and limitation of motion. At present, no specific treatment is available and mesenchymal stem cells (MSCs) have shown promising potential in this regard. The present study aimed to investigate the effect of oral and injectable intra-articular forms of Arnebia euchroma, as an anti-inflammatory and antioxidative agent, on OA in male rats.

Methods: 80 male rats were selected and their anterior cruciate ligament (ACLs) were cut in order to induce knee OA. Then, these rats were divided into 7 groups including Group 1, the recipient of 300 mg/kg Piascledine orally; Group 2, the recipient of 300 mg/kg Arnebia euchroma + avocado orally; Group 3, the recipient of 500 mg/kg Arnebia euchroma orally; Group 4, the recipient of 200 mg/kg injected Arnebia euchroma; Group 5, the recipient of 1 mg Hyalgan; Group 6, the recipient of 1 mg methylprednisolone; and Group 7, without treatment. Group 8 was a control group without the induction of osteoarthritis. After 10 weeks, the rats were anesthetized and their knees went under surgery and then evaluated by radiological and histopathologic methods.

Results: Radiological outcomes showed that the recipient group of Arnebia euchroma + avocado and group 4 receiving 200 mg/kg injectable form of Arnebia euchroma had better effects than Hyalgan and methylprednisolone. Furthermore, the histological findings confirmed the results of radiology indicating that the recipient groups of Arnebia euchroma and avocado, as well as the injected Arnebia euchroma, had smooth cartilage surface and hyaline matrix compared to the group of OA without treatment. The results of this study showed the protective properties of Arnebia euchroma in both oral and injectable forms and could be suggested as an alternative treatment for osteoarthritis.

Conclusion: The results of this study indicated the protective effects of Arnebia euchroma, especially its injectable form, in induced OA in rats. It seems that the effective mechanism of this extract on reducing the symptoms of OA is related to the antioxidant activity of the constituents of this oil.