The effects of cultured red algae-derived bioactive substance on osteoarthritic pain

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Osteoarthritis (OA) is a degenerative disease, the main cause is due to mechanical stimulation of bones and the aging. The cartilage damage accompanies bone, lesions synovial inflammation and osteophyte with the progress of chronic pain are the main symptoms of osteoarthritis. In this study, we investigate the protective effects of bioactive substance (OA-4018) which isolated from Taiwan-cultured red al on osteoarthritis in rats. In preliminary experiment, RAW264.7 macrophage cells was used for cytotoxicity and anti-inflammatory test. The results showed that OA-4018 did not significantly affect the cell viability, and also inhibited the expression of pro-inflammatory protein. In vivo study, the anterior cruciate ligament transection (ACLT)-induced OA model was used, and OA-4018 significantly reduced mechanical allodynia, weight-bearing deficits and knee swelling in ACLT-rats. In summary, OA-4018 show significant effects on suppressing pain and joint swelling in ACLT-rats. In the future, pathological analysis and immunohistochemical staining will be used for explore the protective mechanism of OA-4018 on cartilage, and we look forward the future application of red algae on osteoarthritis.

Keywords: Cultured red algae, Osteoarthritis, Pain, Inflammation