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## STICOPUS CHLORONOTUS AQUEOUS EXTRACT AS A CHONDROPROTECTIVE AGENT FOR HUMAN CHONDROCYTES ISOLATED FROM OSTEOARTHRITIS ARTICULAR CARTILAGE *IN VITRO*

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### SUMMARY

The proinflammatory cytokines, metalloproteinases family (MMPs), inflammatory mediators PGE2, COX-2 and NO are the most important group of compounds responsible for the loss of metabolic homeostasis of articular cartilage by promoting catabolic and destructive processes in the pathogenesis of osteoarthritis (OA). *Sticopus chloronotus*, a marine sea cucumber is rich in n-3 PUFAs and phenolic compound, may exert a favorable influence on the course of the disease. The objective of this present study was to investigate the regeneration and anti-inflammatory potential of *sticopus chloronotus* aqueous extract (SCAE) on human OA articular chondrocytes (HOC). Methods: The HOC isolated from knee joint cartilage removed during surgery were cultured with SCAE for 7 days. The effect of SCAE on anabolic and catabolic genes expression was verified by real-time PCR. Monolayer chondrocytes were stained with toluidine blue whereas sGAG, NO and PGE2 production in medium was analyzed by ELISA. Results: The HOC cultured in various SCAE appeared an almost polygonal morphology maintaining their chondrocytes characteristic. SAE supplementation tested in these studies was found to be effective pro-chondrogenic, anti-inflammatory and anti-oxidative agent, as evidenced by upregulation the expression of cartilage specific markers collagen type 11, aggrecan core protein and sox-9 and downregulation of collagen type 1, IL-1, IL-6, IL-8, MMP-1, MMP-3, MMP-13, COX-2, iNOS and PAR-2 expression. The presence of SCAE in the culture, was able to increase sGAG and reduce NO and PGE2 production significantly. Conclusions: These results suggest that SCAE demonstrated chondroprotective ability by suppressing catabolic activities and oxidative damage and, effectively promote chondrocyte growth, enhanced secretion and synthesis of cartilage extracellular matrix. This approach may be potentially useful as a therapeutic agent for the treatment OA.