Effect of L-Glutamine on Osteoarthritis-related Factors in Human Chondrocyte Culture

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Osteoarthritis (OA) of the knee is a major cause of mobility impairment. A number of studies demonstrate that NSAIDs can abate short-term pain in Osteoarthritis, but there is limited evidence of benefit over simple analgesics. In the case of inflammatory chondrocytes, we observe the possibility of complete treatment and rehabilitation. By using L-Glutamine, We analyzed the effects of L-Glutamine on four osteoarthritis-related proteins expressed in chondrocyte from five patients with OA.

Divided in the interleukin (IL)-1β-stimulated or IL-1β-unstimulated chondrocyte, the former were cultivated with or without L-Glutamine, and the later were same as the former. OA-related factors were quantified by using Enzyme-linked immunosorbent assay (ELISA).

The outcome showed that the levels of TNF-α were higher ($P<0.05$) in the IL-1β-stimulated chondrocyte without L-Glutamine than in IL-1β-stimulated chondrocyte with L-Glutamine. Besides, we also found that the concentration of TIMP-1 remarkably increased ($P < 0.001$) in IL-1β-stimulated chondrocyte with L-Glutamine versus the IL-1β-stimulated chondrocyte without L-Glutamine. Both the levels of TIMP-2 and MMP-3 were higher ($P<0.05$) in control group than in IL-1β-unstimulated chondrocyte with L-Glutamine.

Osteoarthritis, the most common type of arthritis, is a non-inflammatory degenerative joint disease characterized by dysfunction of articular chondrocytes. L-Glutamine may have a predictable helpful effect in human chondrocyte culture from osteoarthritis patients.