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1302 Efficacy of Orally Administered Collagen Peptides on the Progression of Osteoarthritic Lesions in Knee Joints

Purpose:

Over the past years clinical studies indicated the positive effect of orally administered collagen hydrolysate in the treatment of osteoarthritis. More recently, experimental investigations on various chondrocyte and cartilage explant models have demonstrated a clear stimulatory effect of collagen peptides on chondrocyte metabolism and cartilage growth.

The objective of this study was to investigate the effect of specific orally administered collagen peptides on the development and progression of osteoarthritis (OA) in an appropriate animal model.

Methods:

The efficacy of collagen hydrolysate was tested in a randomly assigned placebo-controlled animal study on STR mice. The STR/ort mouse strain develops a naturally occurring OA at a high incidence in the medial tibial plateau of the knee, resembling human osteoarthritis. In 6 month old male STR/ort mice 0.15 mg/ g body weight of a special collagen hydrolysate (FORTIGEL, GELITA AG) was orally administered once daily over a treatment period of 3 months. Animals in the placebo group received albumin (BSA) in the same dosage. At the end of the study, thin tissue sections of the knee cartilage were analyzed for osteoarthritic changes. The stained samples were evaluated by two blinded pathologists independently. OA joint damage was assessed by a well-defined semi-quantitative histopathological score for both cohort groups.

Results:

The progression of the determined grade of OA in the non-treated STR/ort mice correlated with the aging of the animals. Overall, 85% of the male STR/ort mice under investigation developed OA-like lesions at the end of the study. The oral administration of FORTIGEL over 3 months led to a pronounced decrease in cartilage tissue degeneration in the knee joints. The incidence of severe joint destruction was clearly reduced after FORTIGEL treatment and the determined grade of OA decreased significantly ($p < 0.05$) in comparison to the untreated control animals.

Moreover, an analysis of the data suggested a correlation between the determined grade of OA and the body weight of the STR/ort mice. Interestingly, the body weight of the untreated mice was significantly increased in comparison to the FORTIGEL treated animals, corresponding to the determined increase of OA.

Conclusions:

The results indicate that orally administered FORTIGEL was able to slow down or even halt cartilage degeneration in STR/ort mice. The data obtained from this study indicate that specific collagen peptides may prevent the progression of joint degeneration in OA and could possibly be a potential disease-modifying agent for the treatment of degenerative joint diseases.

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