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Gene Expression of Matrix Metalloproteinase-1 and Growth Differentiation Factor-5 in Patients with Knee Osteoarthritis Before and After Treatment

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Abstract

Background: Osteoarthritis (OA), especially at the knee, is a major cause of disability in older adults. Diacerein has anti-inflammatory properties. The current study aimed at detecting the expression of MMP-1 and GDF-5 genes in patients with knee osteoarthritis, testing the effect of diacerein treatment on this expression and appraising their usefulness in predicting the curative validation of diacerein in OA patients.

Methods: 40 controls with grade "zero" OA and 50, with grade 1 to 4, knee OA patients were included in our study. Blood samples were collected from control subjects and patients before and after treatment with diacerein; serum was separated to assess the expression of MMP-1 and GDF-5 genes by "quantitative real-time polymerase chain reaction (qRT-PCR)".

Results: As regards MMP-1 gene expression, there was a statistically significant difference between the controls and the OA patients before and after treatment, with the highest mean among the patients before treatment (P-value < 0.0001). As regards GDF-5 gene expression, there was a statistically significant difference between the controls and OA patients before and after diacerein treatment with the lowest mean amongst the patients before treatment.

Conclusion: the expression of MMP-1 and GDF-5 genes could be a beneficial foreseeable marker for early diagnosis of knee osteoarthritis, innervating the possibility of new scopes for precocious inspection and treatment of these patients, meanwhile, they are non-invasive prognostic markers to portend the effectiveness of diacerein treatment for knee osteoarthritis patients.

Keywords: Osteoarthritis, MMP-1, GDF-5.