

The Influence of Resveratrol on the Synovial Expression of Matrix Metalloproteinases and Receptor Activator of NF- κ B Ligand in Rheumatoid Arthritis Fibroblast-Like Synoviocytes

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Z. Naturforsch. **68c**, 336–342 (2013); received July 30, 2012/May 21, 2013

Medication of rheumatoid arthritis (RA) remains challenging and often controversial concerning side effects or long-term complications. We investigated the effect of resveratrol, a phytoalexin discussed for its chondro-protective and anti-inflammatory qualities, on the synovial expression of matrix-degrading enzymes like matrix metalloproteinases (MMPs) and bone-remodelling proteins in RA fibroblast-like synoviocytes (FLS). Interleukin-1 -stimulated RA-FLS were treated with 100 μ M resveratrol for 24 h. To evaluate the effect of resveratrol on the amount of bound/combined MMPs, a Luminex[®] xMAP multiplexing technology was used. The alteration in expression of receptor activator of nuclear factor- κ B ligand (RANKL) and osteoprotegerin (OPG) was measured by quantitative real-time polymerase chain reaction (qRT-PCR). Resveratrol reduced the expression of MMP-1 ($p = 0.022$), MMP-3 ($p = 0.021$), and MMP-9 ($p = 0.047$). qRT-PCR showed a significant reduction in the relative abundance of the transcripts of OPG ($p = 0.012$) and RANKL ($p = 0.018$). Our *in vitro* findings indicate that resveratrol could be a new target for further pharmacological studies in the field of RA. In the future it could play a role as a possible substitute or supplement to currently used drugs against RA to prevent cartilage matrix degradation and pathological bone resorption due to inhibition of MMPs and RANKL.

Key words: Resveratrol, Rheumatoid Arthritis, Matrix Metalloproteinases