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Title: Effects of pro-inflammatory cytokines on chondrogenesis of equine mesenchymal stromal cells derived from bone marrow or synovial fluid

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1 **Effects of pro-inflammatory cytokines on chondrogenesis of equine mesenchymal**  
2 **stromal cells derived from bone marrow or synovial fluid**

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16 **Highlights**

- 17 • Pro-inflammatory cytokines may affect the ability of equine mesenchymal stromal  
18 cells (MSCs) to heal cartilaginous defects.
- 19 • Interferon (IFN)- $\gamma$  and tumor necrosis factor (TNF)- $\alpha$  maintained the proliferation and  
20 viability of MSCs.
- 21 • IFN- $\gamma$  and TNF- $\alpha$  inhibited chondrocyte differentiation of MSCs.
- 22 • Further studies are required to understand the effect of inflammatory mediators on  
23 cartilage regeneration using MSCs.

24  
25 **Abstract**

26 Mesenchymal stromal cells (MSCs) have the capacity to differentiate into cells of  
27 mesenchymal lineage, such as chondrocytes, and have potential for use in regeneration of  
28 equine articular cartilage. MSCs instilled intra-articularly would be exposed to the inflamed  
29 environment associated with equine osteoarthritis (OA), which may compromise their  
30 function and ability to heal a cartilaginous defect. The aim of this study was to assess the  
31 ability of equine adult MSCs to differentiate into chondrocytes when stimulated with pro-  
32 inflammatory cytokines. MSCs derived from equine bone marrow (BM) and from synovial

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