

# Osteoarthritis: Carbohydrate-binding protein promotes inflammation

April 7 2016

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Function and effect of galectin-1 in osteoarthritis identified for the very first time

More and more people, particularly older people, are suffering from osteoarthritis due to wear and tear on their joints. This primarily affects the knee and hip joints but also the spine. In earlier studies, scientists at MedUni Vienna Department of Orthopaedics showed that raised levels of certain proteins, so-called galectins, and their docking sites are found in patients with osteoarthritis. However, until now, their role in osteoarthritis was largely unknown. In a study that was recently published in the *Journal of Immunology*, MedUni Vienna researchers managed to identify the function of galectin-1 for the first time

worldwide and established that the carbohydrate-binding protein controls inflammation in the affected cartilage. This outstanding study was also featured as a "Research Highlight" in the leading journal *Nature Reviews Rheumatology*.

"For the very first time our study showed that galectin-1 triggers [inflammation](#) rather than the inflammation triggering secretion of this protein," explains Stefan Tögel, who is concerned with the glycobiology of orthopaedic diseases at the University Department of Orthopaedics. MedUni Vienna is one of the first research establishments in the world to conduct systematic research into this topic. Glycobiology looks at the biological relevance of carbohydrate chains for the many different types of cell in the human body.

Galectin-1 is an example of a carbohydrate-binding protein in humans. In osteoarthritis, this protein is over-expressed in the [joint cartilage](#) – and the worse the degeneration of the joint, the more of it is secreted. Galectin-1 promotes inflammation by triggering the release of inflammatory factors via the NF-kB signalling pathway, which in turn contributes to destruction of the joint. "However, what we still don't know is the answer to the question: why is galectin-1 so strongly expressed in the first place?," explains Tögel.

The glycobiologists at MedUni Vienna are already conducting further research to find out whether galectin-1 could be used in future as a target for preventive treatments or even as a possible biomarker for [osteoarthritis](#).

**More information:** S. Toegel et al. Galectin-1 Couples Glycobiology to Inflammation in Osteoarthritis through the Activation of an NF- B- Regulated Gene Network, *The Journal of Immunology* (2016). [DOI: 10.4049/jimmunol.1501165](https://doi.org/10.4049/jimmunol.1501165)

Osório J. Osteoarthritis: Galectin-1 damages cartilage via inflammation.  
*Nat Rev Rheumatol.* 2016 Mar;12(3):132–3.

Provided by Medical University of Vienna

Citation: Osteoarthritis: Carbohydrate-binding protein promotes inflammation (2016, April 7)  
retrieved 10 April 2024 from  
<https://medicalxpress.com/news/2016-04-osteoarthritis-carbohydrate-binding-protein-inflammation.html>

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