

## **GLYCOBIOLOGY OF LUMBAR INTERVERTEBRAL DISCS DEPENDS ON THE STRUCTURE OF STABILIZING LUMBO-PELVIC MUSCLES IN MICE**

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Low back pain constitutes a major health condition, being the most important reason for sick leave in most industrialized countries. Usual care is provided by physiotherapists who employ a variety of methods including cognitive-behavioral therapy, spinal manipulation and coordination exercises. Glycosaminoglycans play a key role in discal disease, where its biochemistry is severely disrupted. Our goal was to understand the role of muscle structure in the glycobiology of discs by using MDX mice (muscle dystrophy) as an animal model, since biological mechanisms of therapeutic exercise are still unknown. There appears to be only one glycosaminoglycan in the lumbar disc of mice, which is a hybrid chain of chondroitin/dermatan sulfate with a strong pattern of Sulfation, (4-6 S) being the most abundant as shown by ion-exchange / gel-filtration chromatography with a HPLC device. Mice presenting muscle dystrophy exhibited a pronounced number of pathological changes such as decreased water content, lower glycosaminoglycan concentration, and accelerated aging processes. The intervertebral disc of mice presents several differences when compared to human ones. Nevertheless, neuro-muscular disease appears to be well correlated with discal health status. The clinical decision making of prescribing coordination exercises appears to be well supported by biochemical analysis.

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