

# Synvisc® hemmt die Schmerzweiterleitung vor Ort

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## Effects of different molecular weight elastoviscous hyaluronan solutions on articular nociceptive afferents.

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**OBJECTIVE:** To compare 3 different hyaluronan (HA) preparations used as therapeutic agents for osteoarthritis pain in humans in order to establish the degree to which a single application affects the sensitivity of nociceptors in both the normal and the acutely inflamed rat joint.

**METHODS:** In anesthetized rats, single-unit recordings were performed from the medial articular nerve of the right knee joint under normal conditions and during an acute experimental arthritis. Fifty fine afferent units (conduction velocities 0.8-15.3 meters/second) responded to passive movements of the knee joint. They were exposed to a torque meter-controlled, standardized stimulus protocol consisting of innocuous and noxious inward and outward rotations of the joint. This stimulus protocol of 50 seconds' duration was repeated every 5 minutes for 2-3 hours. Three commercially available HA preparations and a buffer solution, the solvent of these preparations, were injected intraarticularly after discharges resulting from 6 stimulus protocols were averaged and used as controls.

**RESULTS:** Both in normal and in inflamed joints, the injection of Hyalgan did not reduce nerve impulse frequency of the evoked discharges. The injections of Orthovisc had no effect in normal joints, but produced a transient frequency reduction of the evoked discharge in inflamed joints. Synvisc significantly reduced (by an average of 50%) the impulse discharge in both normal and inflamed joints 50 minutes after injection, and this level of impulse discharge continued until the end of the recording period (120-130 minutes after injection). The buffer, which had elastoviscous properties substantially different from those of Hyalgan, Orthovisc, and Synvisc, had no such effect.

**CONCLUSION:** We conclude that the elastoviscous properties of HA solutions are determining factors in reducing pain-eliciting nerve activity both in normal and in inflamed rat joints.

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