

# Morphologic changes of the regeneration in the rat's (Sprague Dawley) calcaneous tendon by continuous ultrasound applications [Cambios morfológicos en la regeneración del tendón calcáneo de rata (Sprague Dawley) por la aplicación de ultrasonido continuo]

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Tendon injuries always account for major clinical and therapeutic problems, due to their functional significance and unique healing. Physiatrics support, specifically ultrasound treatment, has been shown to be effective in the regeneration of the calcaneal tendon. The objective of this study was to morphologically analyze the effect of the use of continuous ultrasound in the post surgery regeneration of the calcaneal tendon of the rat. Ten albino, Sprager Dawley rats were used. Following 48 hours of post tenorrhaphy, a daily session of therapeutic ultrasound was initiated, with an intensity of 1W/cm<sup>2</sup>, frequency of 3 MHz, header at 0.5 cm ERA, per 30 seconds for 10 days. The rats were sacrificed 48 hours after completion of the ultrasound treatments, for the extraction and dissection of the calcaneal tendon of the right posterior member, while the left posterior member was used for normal control. For purposes of morphological comparison a group of control rats for the treatment was used, in which the injury was caused without applying the ultrasound. Samples were fixed in buffered formalin and stained with H.E. The tendons of the experimental group were found to be in an advanced stage of regeneration which fibroblasts presented morphological characteristics of an active cell in the synthesis and secretion of the extracellular matrix, with an average of fibroblasts similar to that obtained in the normal tendon. At the same time, the tendon of the control group in the treatment, presented a later regeneration stage. The collagen fibers were infiltrated by conjunctive tissue and blood vessels, with an average of fibroblasts that tripled the average found in the normal control, which determined that the tendon without the ultrasound treatment was still in an inflammatory process. This study confirms that the use of continuous ultrasound generated a rapid cellular proliferation in the injured tendon of the rat, and consequently

accelerates its regeneration.

Calcaneus tendon

Morphology

Tendon regeneration

Ultrasound