

Effect of topical application of the *Aloe vera* extract after partial transection in the Achilles tendon

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BACKGROUND – Tendon lesions are a clinical problem due to the formation of a scar at the site of injury, becoming a region with high incidence of recurrent rupture [1]. The use of plant extracts is promising in the treatment of this kind of trauma, due to its lower cost compared to allopathic medicines. Our purpose was to analyze the effect of topical application of *A. vera* extract after partial transection of the Achilles tendon of rats.

METHODS – Tendons of the Wistar rats were partially transected in the tension region. Following the lesion, the tendons received topical application of 50% *A. vera* extract (32 mg) during the consecutive 7 days. The tendons removed at 7 and 14 days after the injury were used for hydroxyproline and glycosaminoglycans (GAGs) quantifications, zymography for metalloproteinase-2 and western blotting for collagen types I and III.

RESULTS - A higher concentration of hydroxyproline (mg/g of tissue), that estimate the total collagen content in the tissue, was found in tendons treated with *A. vera* extract, at 7 (68.27 ± 15.99) and 14 (87.11 ± 8.73) days after injury, compared with their respective controls (57.88 ± 6.08 and 48.81 ± 13.12) without plant treatment. Considering the quantification of GAGs (mg/g of tissue), only the tendons treated with the plant presented higher concentration of these components (15.83 ± 3.86) compared to the control (10.18 ± 2.18) on the 14th day. For metalloproteinase-2, the active isoform (62 kDa) was decreased on the 7th and 14th days in the groups treated with the *A. vera*, compared to their control groups. Surprisingly, the amount of type I collagen was higher 14 days after the injury in the group without treatment with the plant. The collagen type III content was also diminished in the plant group after 7 days of the injury, compared to the group without treatment.

CONCLUSION - Our results suggest the *A. vera* extract stimulates total collagen and GAGs synthesis after partial transection of the Achilles tendon.

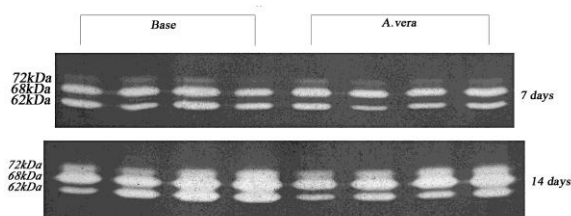


Figure 1: Zymography for metalloproteinase-2 of rat tendon extracts (n=4). Observe the presence of the latent (72kDa), intermediate (68kDa) and active (62kDa) isoforms in all groups. The active isoform was more prominent in the groups without plant treatment (base) compared to the *A. vera* group, 7 and 14 days after the lesion.

REFERENCE

[1] James R, Kesturu G, Balian G, Chhabra AB. Tendon: biology, biomechanics, repair, growth factors, and evolving treatment option, *J Hand Surg*, 33: 102-112, 2008.

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