

# Platelet-rich plasma and tendon healing: rat model

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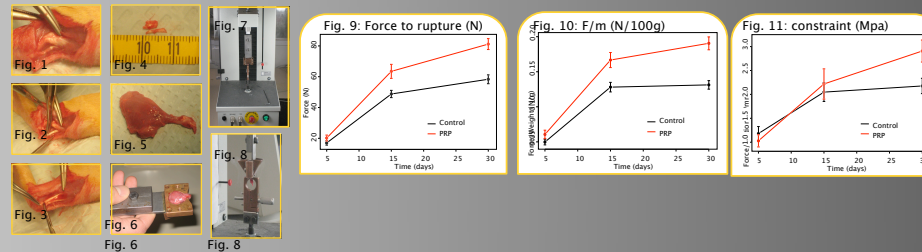
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## Introduction

The aim of our study was to determine if a Platelet-Rich Plasma (PRP) injection could improve the healing process of ruptured Achilles tendons of rats.

## Methods

- A 5mm defect was surgically produced in the Achilles tendon of 120 rats (Fig.1-5).
- Forty-five rats received post-surgery a PRP or PBS injection *in situ*.
- Twenty rats of both groups were euthanized after 5, 15 and 30 days.
- Fifteen collected tendons were immediately submitted to a biomechanical tensile strength test until rupture using a clamping "cryo-jaw" device ( Fig. 6-8) and then used for transcriptomic analyses.
- Histological and biochemical analyses were performed on five tendons in each group.



## Results

We observed that the force necessary to induce tendon rupture ( $F$ ) during biomechanical tensile testing increased with time in both groups; that this force was greater for tendons which had been submitted to an injection of PRP (Fig. 9).

The ratio between force and weight ( $F/100g$ ) increased with time in both groups; that this ratio was greater for tendons which had been submitted to an injection of PRP too. There is also a significant interaction between time and the group (Fig. 10).

The surface area of the section of the tendons increased between 5 and 15 days followed by a stabilization. After 30 days, sections in both groups were similar. Thus, the constraint was similar after 5 and 15 days but is significantly better for PRP group after one month (Fig. 11).

## Discussion – Conclusion

A single PRP injection in ruptured Achilles tendon at the time of surgery influences the early phase of healing and results in an ultimate stronger mechanical resistance.

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