



“Together,
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- Category : Shoulder
- Detail Category : Rotator cuff

Purified Exosome Product Enhances Tendon-to-Bone Healing in a Rat Rotator Cuff Repair Model

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Introduction and Background

Tendon-bone healing after rotator cuff injury has always been a clinical challenge. Our focus in this study was to examine the role of intraoperative use of purified exosome products (PEP) in the treatment of rotator cuff injuries and to assess the effect of PEP on supraspinatus tendon and muscle healing after rotator cuff repair in a rat model.

Material and Method

This study used 120 Sprague-Dawley rats that underwent an acute supraspinatus tendon dissection followed by repair using a single transosseous suture. They were divided into three groups: a control group that received only sutures, a TISSEEL group that used a TISSEEL patch of approximately 0.5 square centimeters, and a PEP-TISSEEL group that used a similarly sized TISSEEL patch combined with PEP. Autopsies were performed at 1, 3, 6, and 8 weeks after surgery. Analyses were performed using molecular biology, biomechanical, and histologic techniques.

Results

The results showed that the rotator cuff healed significantly better in the PEP-TISSEEL group, with biomechanical and histological evaluations showing increased rotator cuff strength and decreased scar tissue formation. PCR and Western blot analyses indicated that PEP-TISSEEL treatment promoted an early inflammatory response after injury and stimulated collagen expression, which is essential for rotator cuff healing after the third week. critical for rotator cuff healing after the third week.

Conclusions

We conclude that PEP significantly promotes the healing process by modulating the inflammatory response and enhancing collagen expression after injury. The intraoperative use of PEP-enriched patches can effectively promote rotator cuff healing and has a promising future.



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Figure & Table 1.

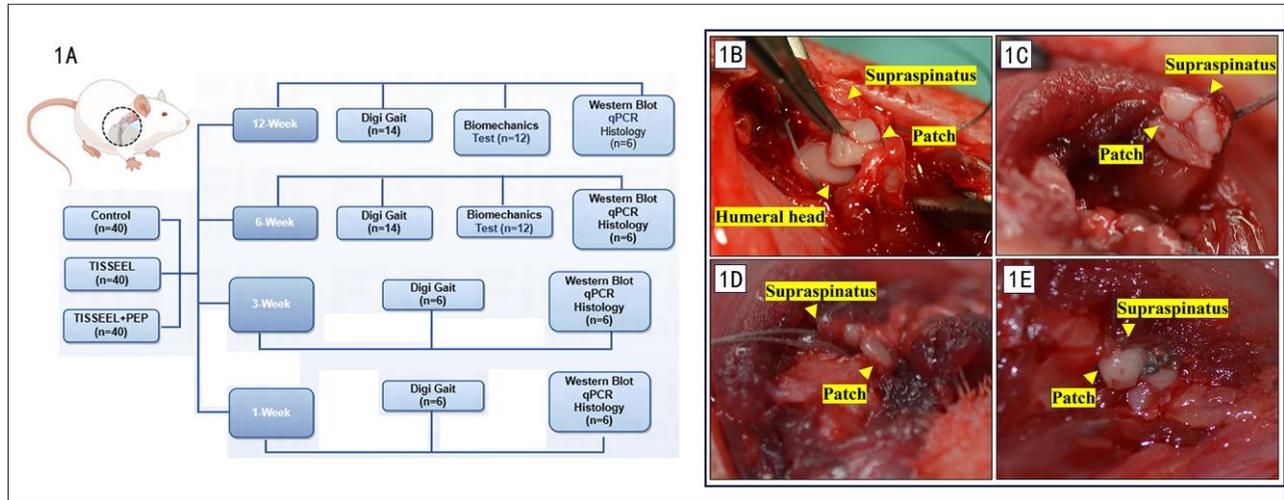


Figure & Table 2.

