Kartogenin Enhances Tendon Graft and Bone Tunnel Healing in a Rat Model

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Tendon Bone Junction Is Strong

- Tendon-Bone Junction is Strong but lacks transition zone
  - Approximately 30% for a general practitioner
- Difficult to cure due to its special anatomical structure
- Surgical repair alone does not restore the unique protective fibrocartilage transition zone

KGN leads to Chondrogenesis
Controversial PRP Treatment

• The efficacy of PRP treatment for tendon injury is hotly debated in orthopaedic surgery and sports medicine

• “One-size-fits-all” approach
  – Platelets used in PRP treatment are completely activated and all factors are released at once
Kartogenin (KGN) + PRP Injection
KGN Preparation

KGN Stock in DMSO

100uM

PLUS

“Activator”

PRP

Rat Model to Resect Achilles Tendon

Group A
50uL KGN + PRP

Group B
50 uL PRP sol’n

Group C
Control
Effects of KGN with PRP on TB Tunnel Healing
KGN+PRP Treatment Results in Fibrocartilage Regeneration

[Images of microscopic sections labeled A, B, C, D, E, F with labels B, I, T]
Summary of Results

- KGN + PRP led to formation of transitional zone (time-dependent)
- PRP alone did not induce formation of transitional zone
- Control group showed no formation of transitional zone
Discussion

- KGN promotes formation of “fibrocartilage-like” interface between the tendon graft and bone tunnel

- PRP may not effectively promote fibrocartilage formation independently

- Nonetheless, PRP functions as an effective "carrier" to supply scaffolds and growth factors necessary for the enhancement of wound healing

- For tendon bone junction, KGN could be a promising, cell-free approach to augment the tendon-bone interface healing
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