

Cytokines inhibition and time-related influence of inflammatory stimulus on hyperalgesia induced by nucleous pulposus

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Disc Herniation Symptoms

Mechanical – compression of neural structures

Inflammation – nucleous pulposus contact with neural structures

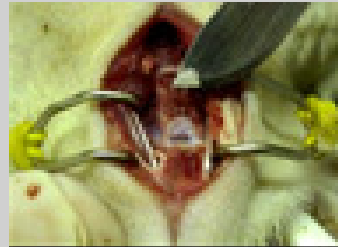
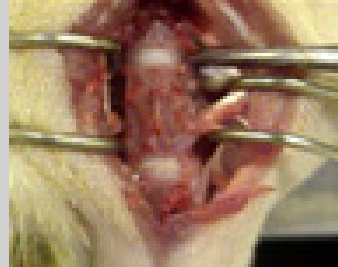
Goal of the Study

1. Identification and dosage of cytokines of nucleous pulposus.
2. The observation of cytokine inhibition by specific anti-body on hyperalgesia.
3. Influence of time contact of the nucleous pulposus with L5-dorsal root ganglion upon mechanical and thermal hyperalgesia.

Material and Methods

- Male Wistar rats – 220-250g
- Experimental model – deposition of nucleous pulposus from sacroccocygeal region over the right L5- dorsal root ganglion.

Removal of NP from sacroccocygeal region

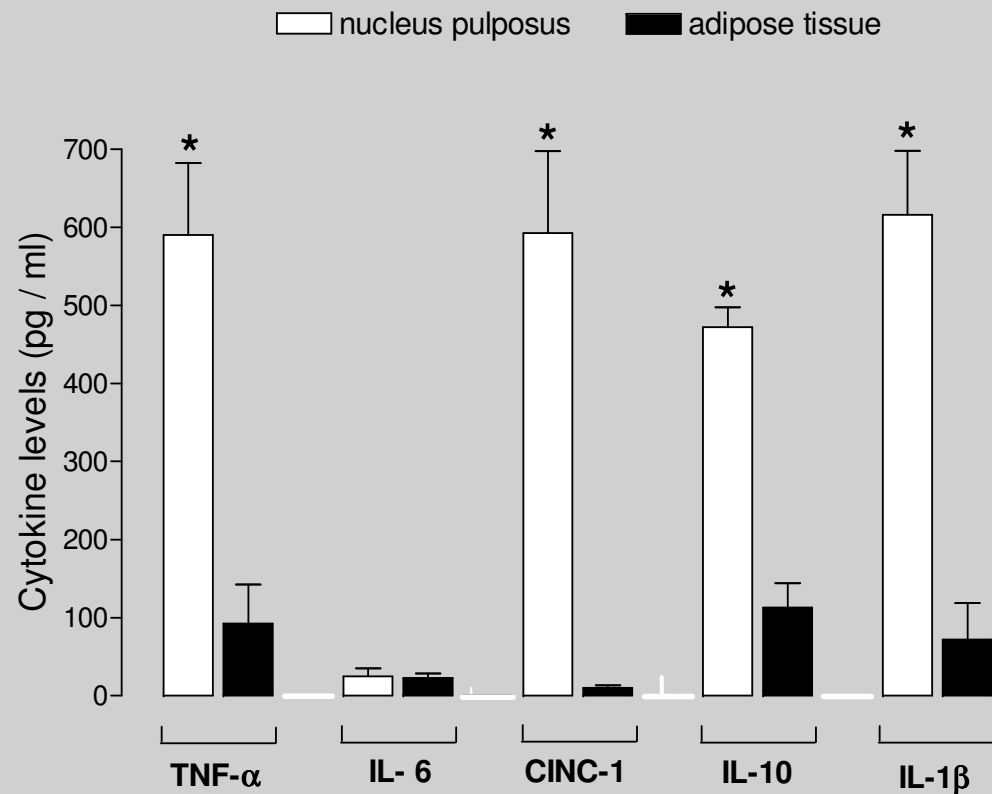


Deposition of NP fragment over L5 dorsal root ganglion



Experiment 1- Identification and dosage of nucleus pulposus cytokines

- Nucleous pulposus harvested from coccygeal disc (n=10).
- Adipous tissue used as control.
- Cytokines identification and dosage

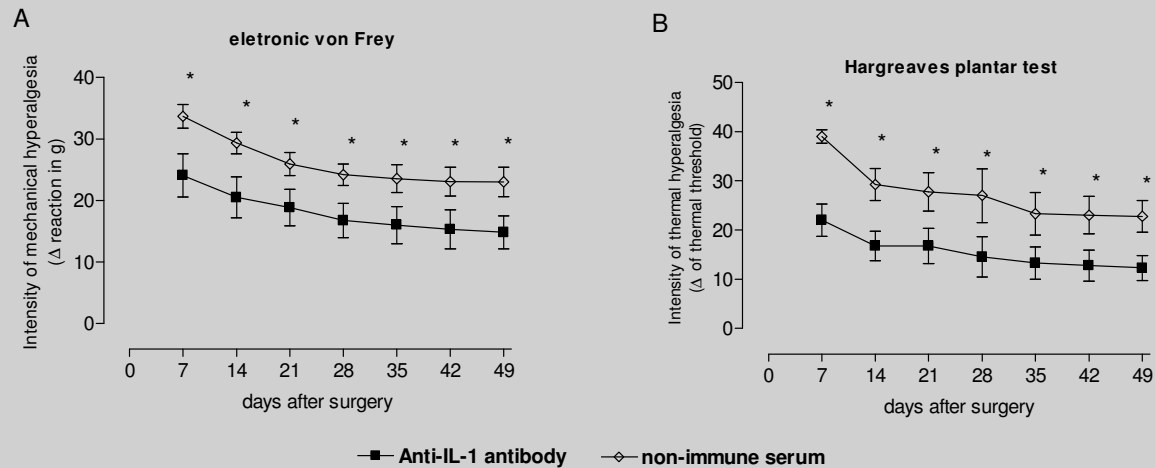
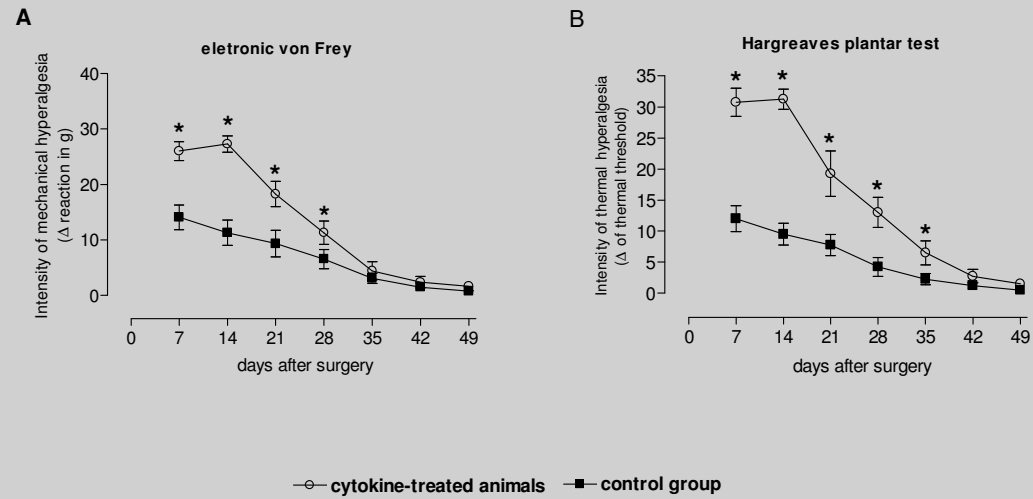


Experiment 2- Cytokine inhibition effect on mechanical and thermal hyperalgesia

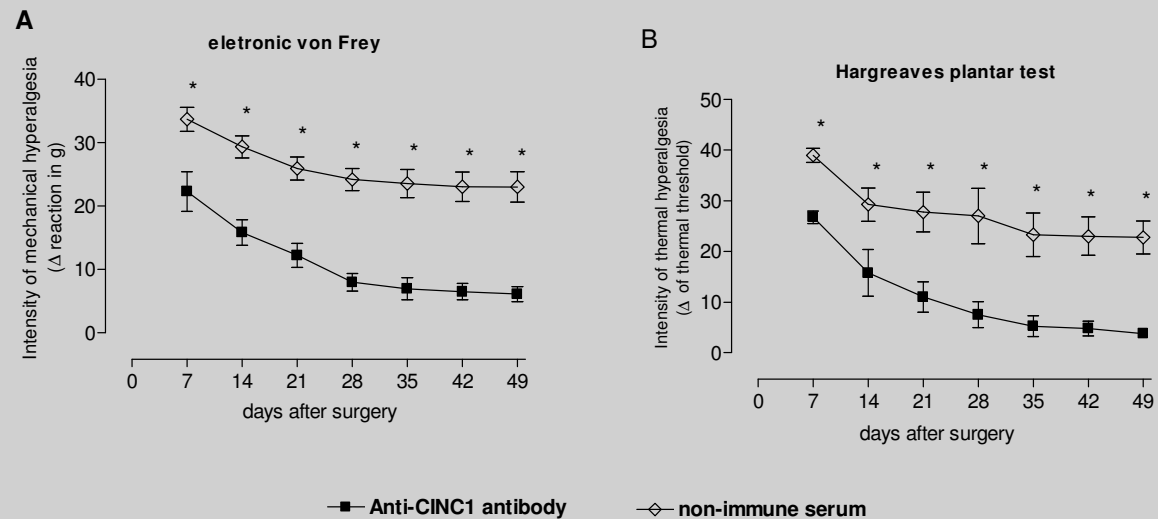
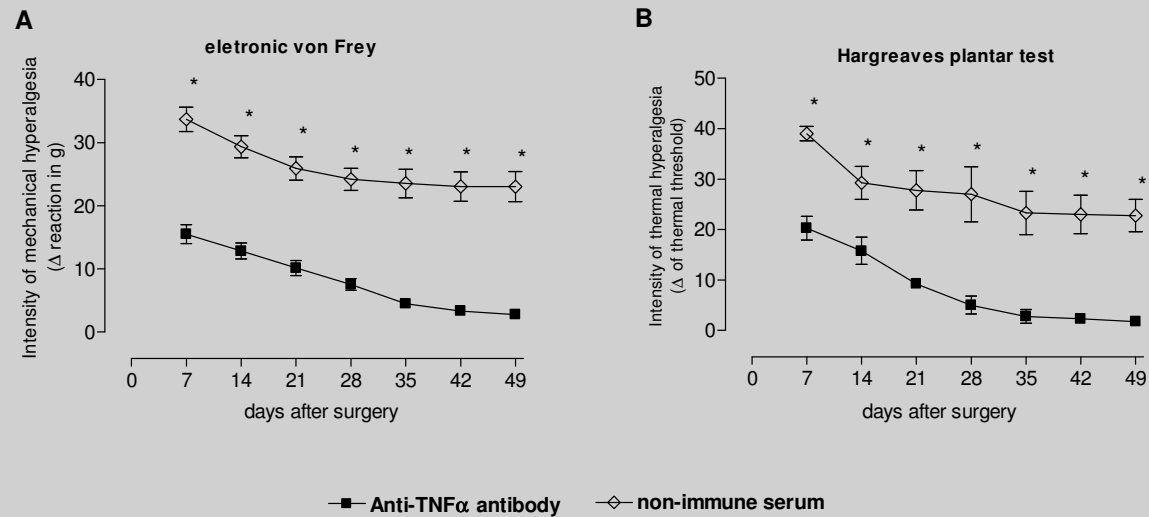
Inhibition of TNF- α / IL-1 β / CINC-1 with specific antibodies.
Contact of harvested nucleus pulposus with antibodies before implantation over L5- dorsal root ganglion.

- Group 1 –antibody anti-TNF α (n=5)
- Group 2 –antibody anti-IL-1 β) (n=5)
- Group 3 –antibody anti-CINC-1 (n=5)
- Group 4 – control group – non immune serum (n=5);
- Group 5 – positive control group - sponge and cytokines (TNF α , IL-1 β e CINC-1) (n=5);
- Group 6 – negative control group – sponge and saline solution (n=5).

Cytokine inhibition effect on mechanical and thermal hyperalgesia

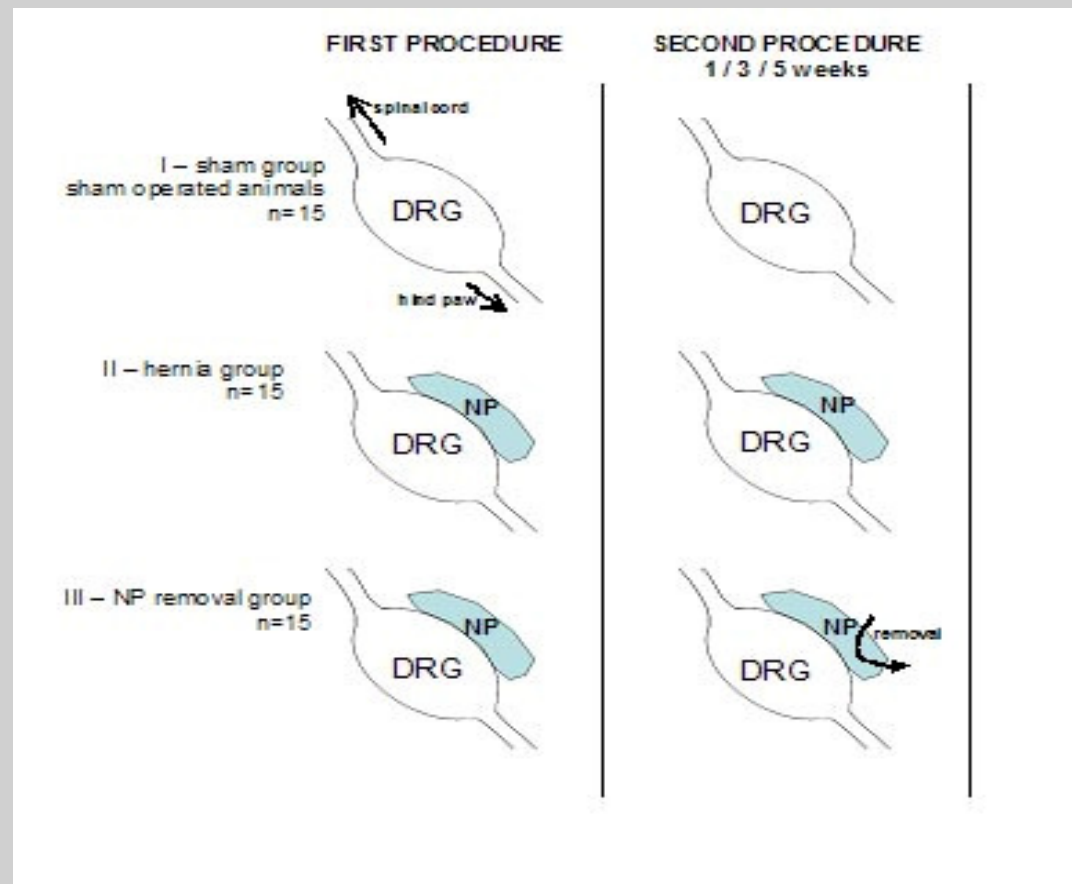


Cytokine inhibition effect on mechanical and thermal hyperalgesia

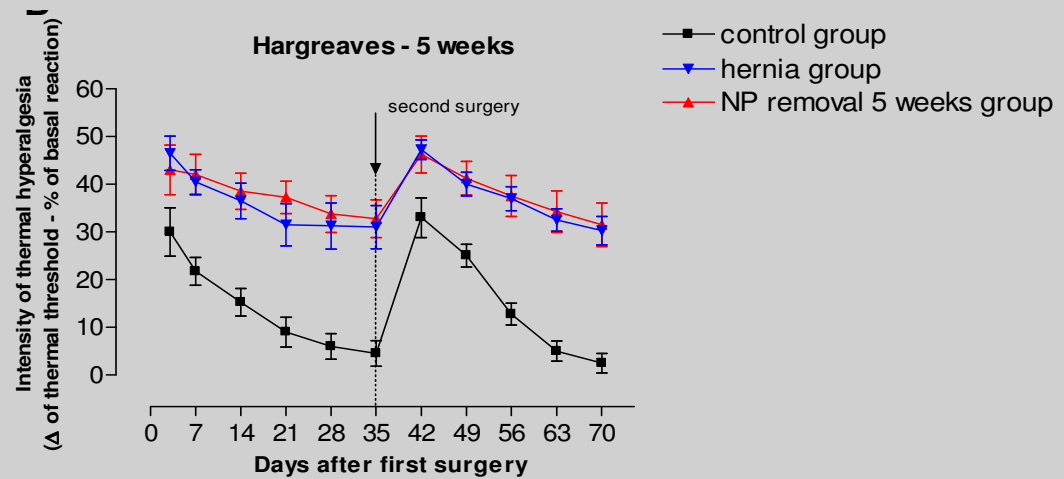
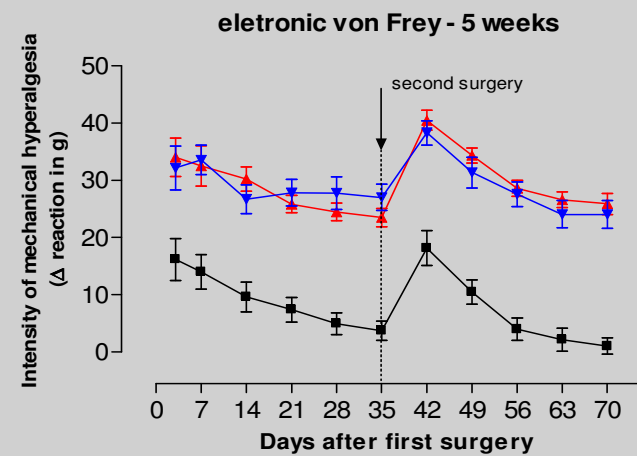
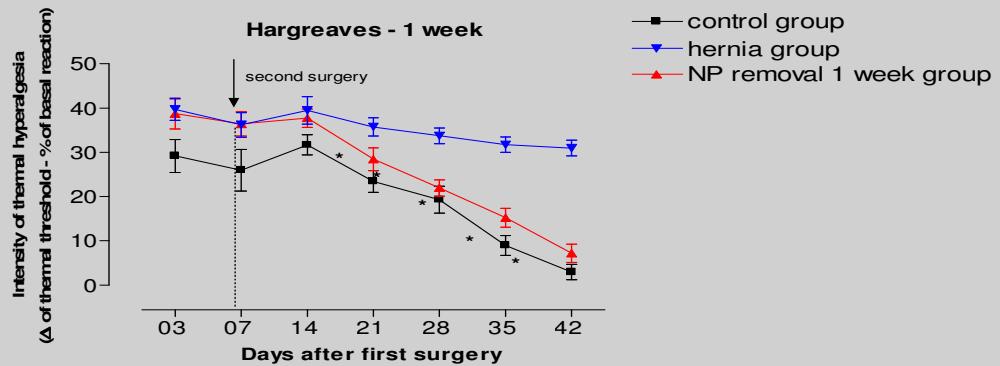
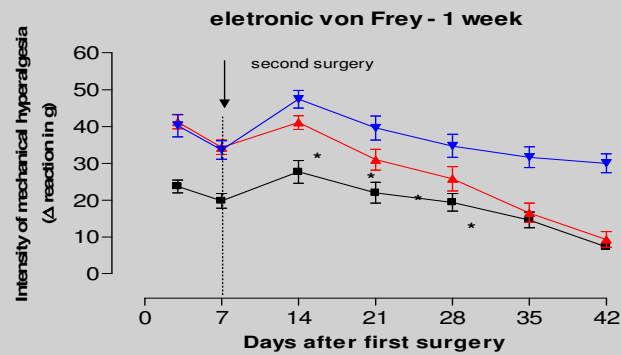
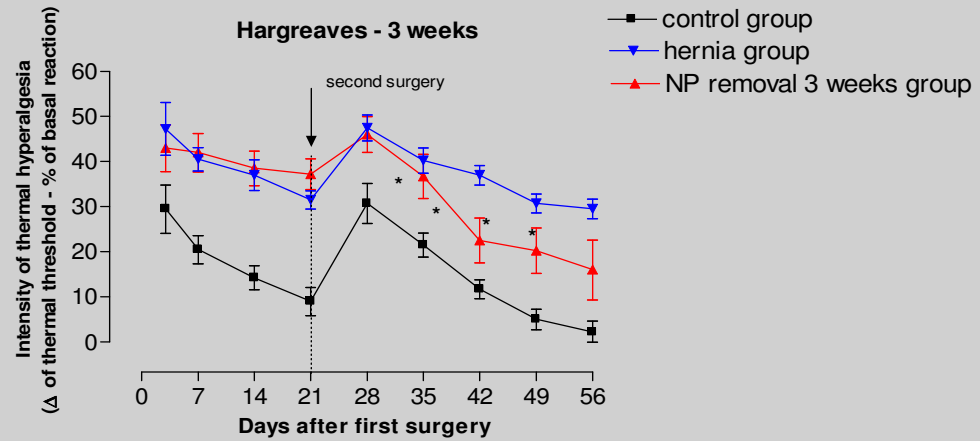
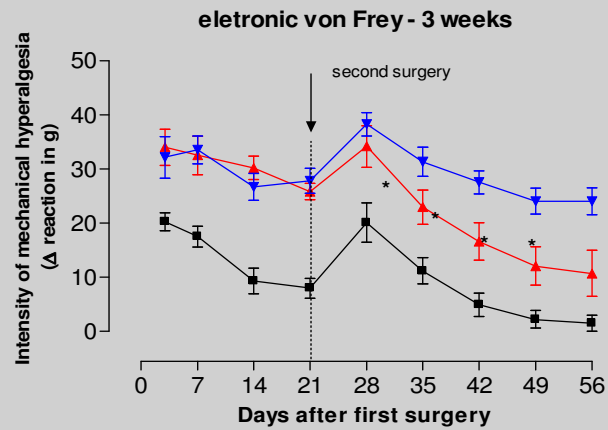


Experiment 3 – Influence of nucleous pulposus length of time contact

- Removal of nucleous pulposus 1, 3 and 5 weeks after its deposition over L5- dorsal root ganglion.
- Mechanical and thermal hyperalgesia evaluation.



Influence of nucleus pulposus length of time contact



Conclusion

- Identification of TNF- α / IL-1 β / CINC-1 cytokines on nucleous pulposus.
- Cytokine inhibition influence on mechanical and thermal hyperalgesia.
- The length of nucleous pulposus contact with dorsal root ganglion influences mechanical and thermal hyperalgesia.