# CHALLENGES AND LIMITATIONS IN CONDUCTING PRECLINICAL TRIALS ON COLLAGEN-INDUCED ARTHRITIS IN RATS

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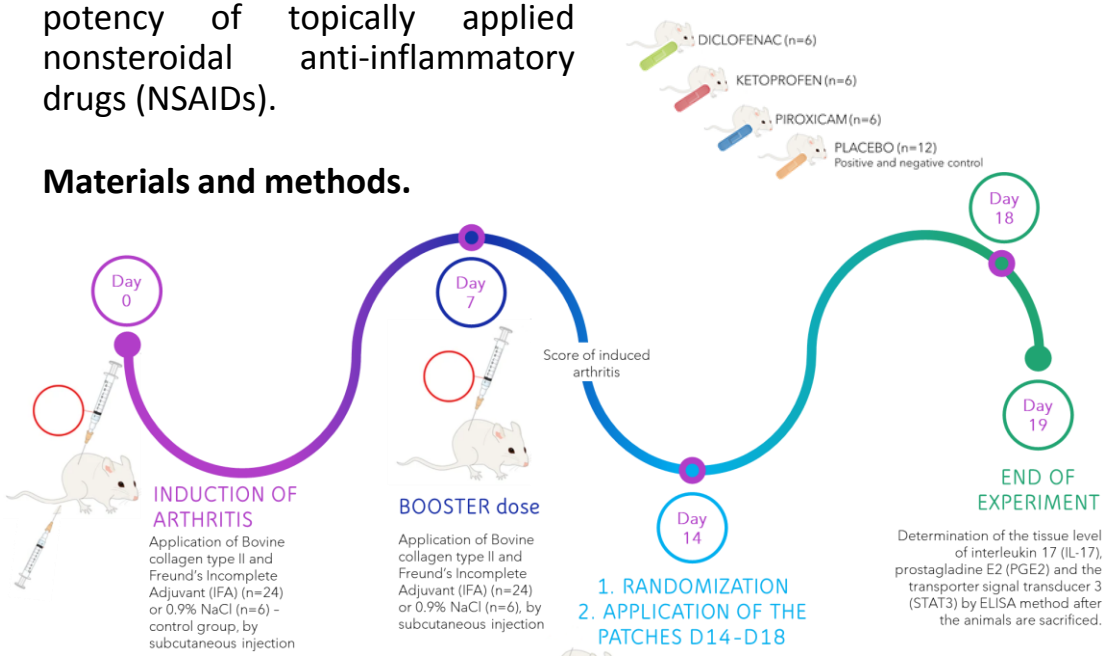
**Introduction.** Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by joint inflammation and cartilage destruction. Animal models are used to evaluate the mechanisms involved in the pathogenesis of the disease, but also predict the potency of topically applied nonsteroidal anti-inflammatory drugs (NSAIDs).

**Aim of the study.** The aim of the study is to evaluate the effect of topical application of NSAID on the concentration of tissue immune parameters in collagen-induced arthritis in Wistar rats and to define limitations of this model.

**Materials and methods.**




**Results and discussion.** Tissue leveles of immune factors (IL-17, STAT3, PGE2) indicated the potential efficacy and pathway of action of NSAID in the collagen-induced arthritis model leading to the selection of one of the three NSAIDs tested as the first-choice drug. Experiment also shown few challenges and limitations of this animal model. Respecting the 3R (reduce, refine, replace) of animal research, we had a small sample, which makes statistical analysis difficult. Pathohistological analysis showed local forms of inflammation (calor, rubor, dolor, tumor and function laesa), but we believe that longer period after induction is necessary for more severe microscopic changes in the joints. During analysis, only sagittal section was used without a transverse one.

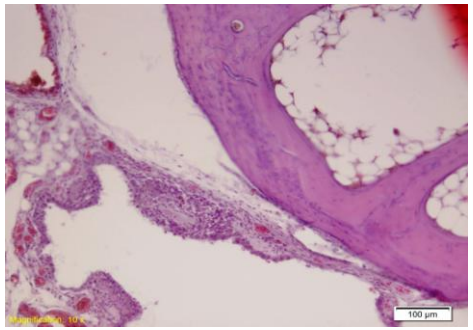



Figure 1. Inflamed synovial membrane (HE, x100

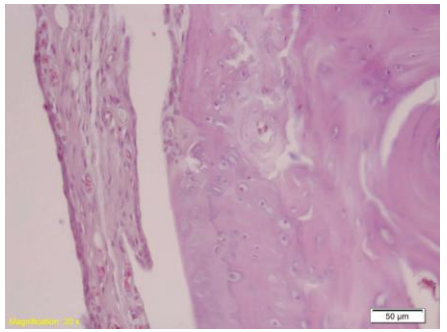



Figure 2. Minimal superficial cartilage destruction by synovial pannus (HE, x200)

**Conclusions.** The obtained results will provide additional knowledge of the impact of immunological parameters on the pathophysiology of the disease and will provide additional instructions for the creation of collagen-induced arthritis animal model.