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**MORPHOLOGICAL STUDY OF THE
EFFECT OF THE DRUG "DICLOCOR" IN
THE COURSE OF COLLAGEN-INDUCED
ARTHRITIS IN RATS**

ABSTRACT. Background. Since NSAIDS have some detrimental side effects, studying new combinations of NSAIDS with other substances could provide a reduction of the dosage of the NSAID while retaining therapeutic effectiveness. **Objective.** To study the effect of Diclocor on the cartilage morphology in the course of collagen-induced arthritis in rats in comparison with sodium diclofenac and quercetin. **Methods.** Autoimmune arthritis was reproduced by subcutaneous injections of type II collagen ("Sigma-Aldrich", USA). Morphological studies were performed using standard light microscopy techniques. **Results.** After treatment with both Diclocor and diclofenac sodium no cartilage destruction was observed and tissue hyperplasia was low. Some residual effects were observed in the synovial membranes in the Diclocor group, and in periarticular tissues – in the diclofenac sodium group. Under the action of quercetin, there was a sufficiently high level of hyperplastic processes and pannus formation in sinovium. **Conclusion.** Diclocor and diclofenac sodium express a profound normalizing effect, while Quercetin is less active.

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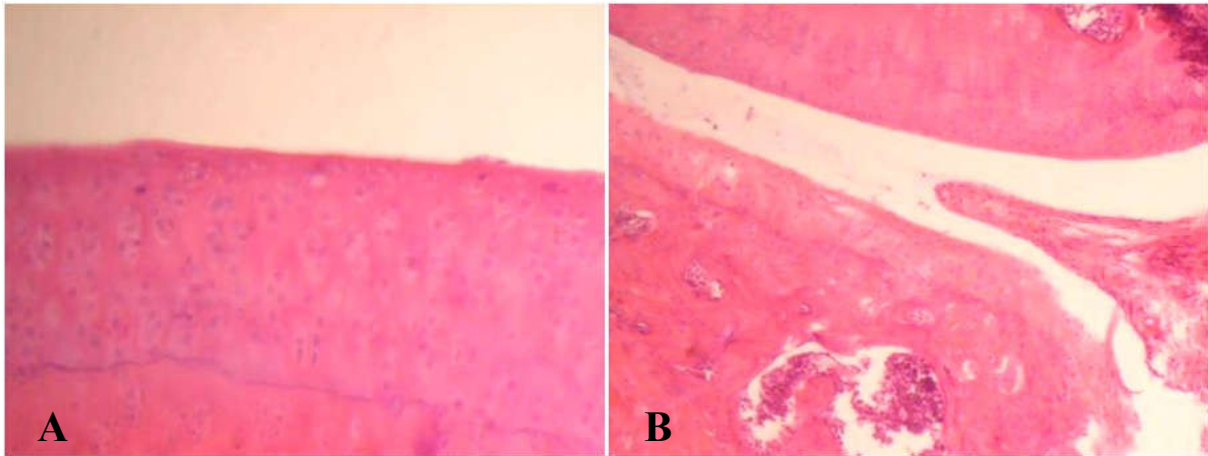


Fig. 1. Morphological structure of knee joint in intact rat. A – Hyaline cartilage of articular surface, zonal distribution of cartilage cells is clearly seen. Hematoxylin&Eosin staining. $\times 250$. B – Synovial membrane of areolar type protrudes into the cavity as the wedge-shaped fold, its cellularity is moderate. Hematoxylin&Eosin staining. $\times 150$.

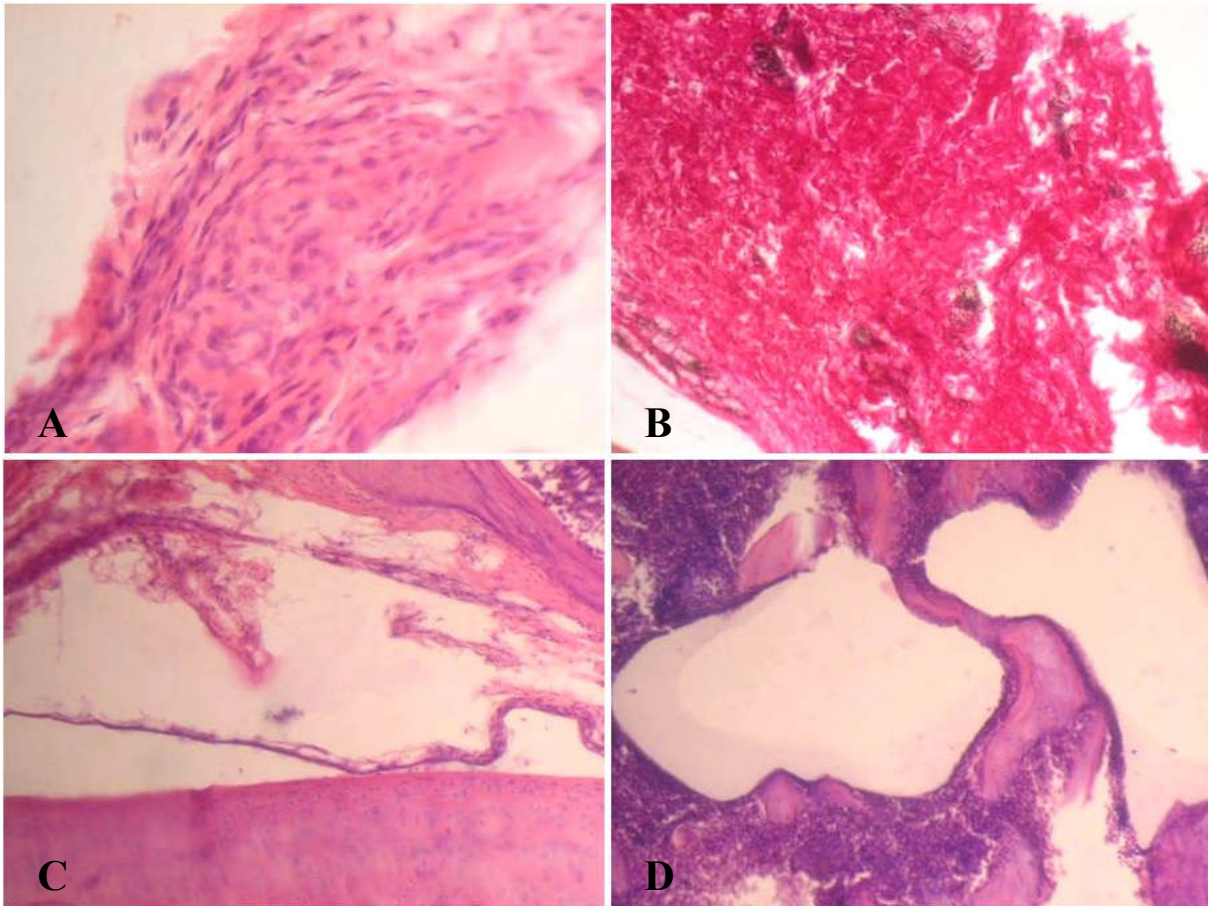


Fig. 2. Morphological structure of knee joint in rat with collagen-induced arthritis on day 28 of experiment. A – Proliferation of histiocytes and fibers of synovial membrane. Hematoxylin&Eosin staining. $\times 200$. B – Hyperplasia of dense synovial membrane. Van Gieson's picrofuchsin staining. $\times 200$. C – Protein effusion in the cavities of synovial membrane. Hematoxylin&Eosin staining. $\times 150$. D – Cavities filled with protein effusion in bone marrow. Hematoxylin&Eosin staining. $\times 150$.

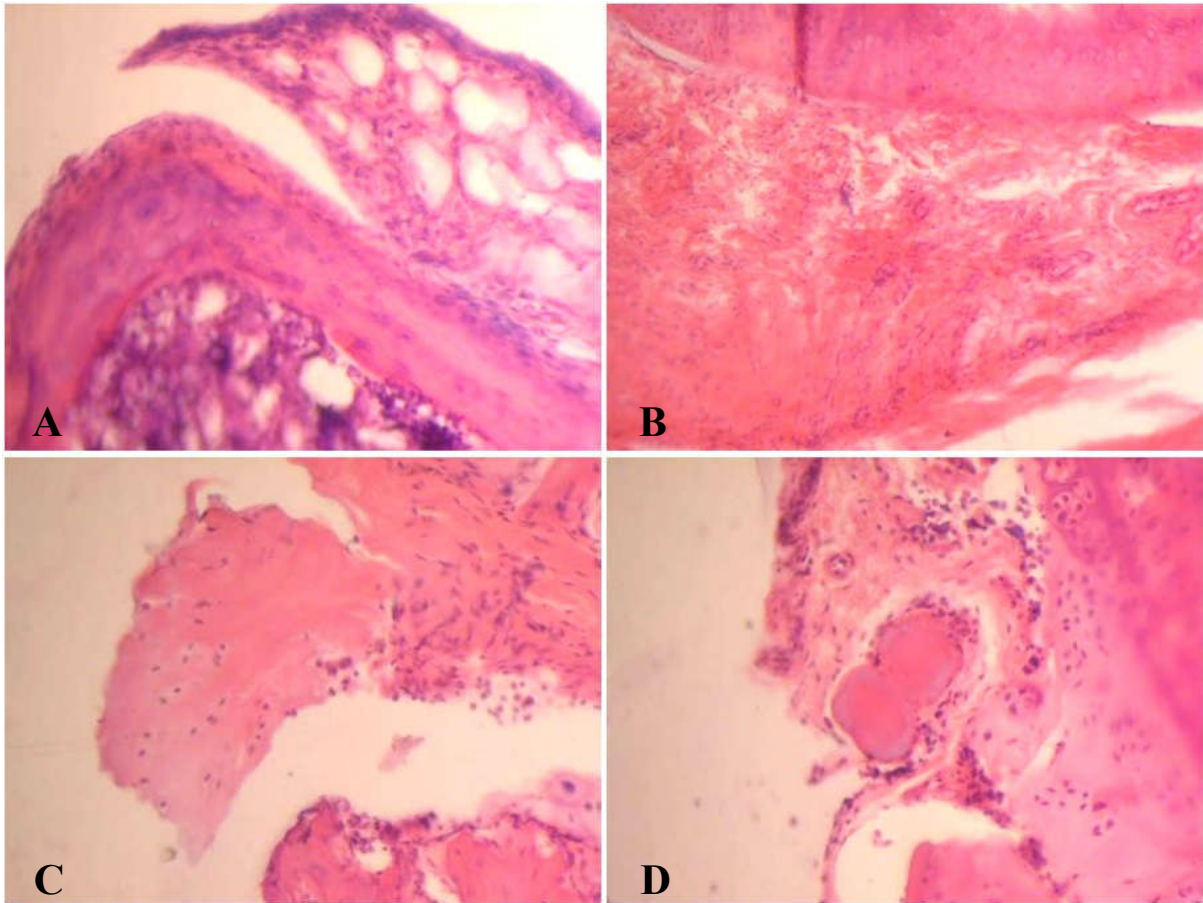


Fig. 3. Morphological structure of knee joint in rat with collagen-induced arthritis on day 28 of experiment. Hematoxylin&Eosin staining.× 200. A – Hyperplasi of synovial membrane forming pannus on the cartilage surface. B – The pannus tightly connected to the articular surface. C – Structureless swelled destroyed areas of articular cartilage. D – Structureless swelled destroyed areas of articular cartilage, changed staining, sporadic leukocytes are seen. Hematoxylin&Eosin staining. ×200.

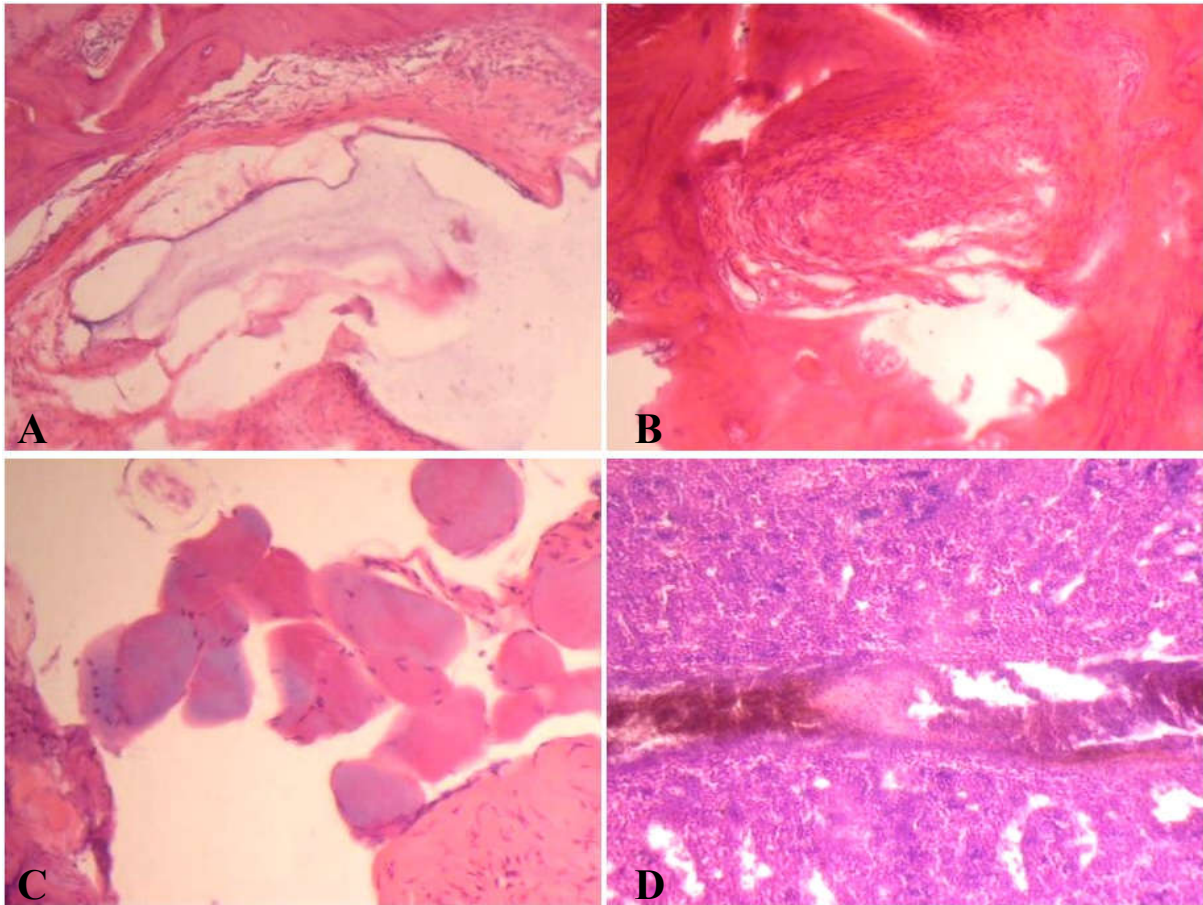


Fig. 4. Morphological structure of knee joint in rat with collagen-induced arthritis on day 28 of experiment. Hematoxylin&Eosin staining. A – Substitution of the area of articular cartilage by connective tissue, superficial effusion. ×200. B – Substitution of the area of destroyed subchondral bone by connective tissue. ×200. C – Swelled basophilic muscle fibers. ×150. D – Dilated plethoric vessel in the bone marrow cavity. ×150.

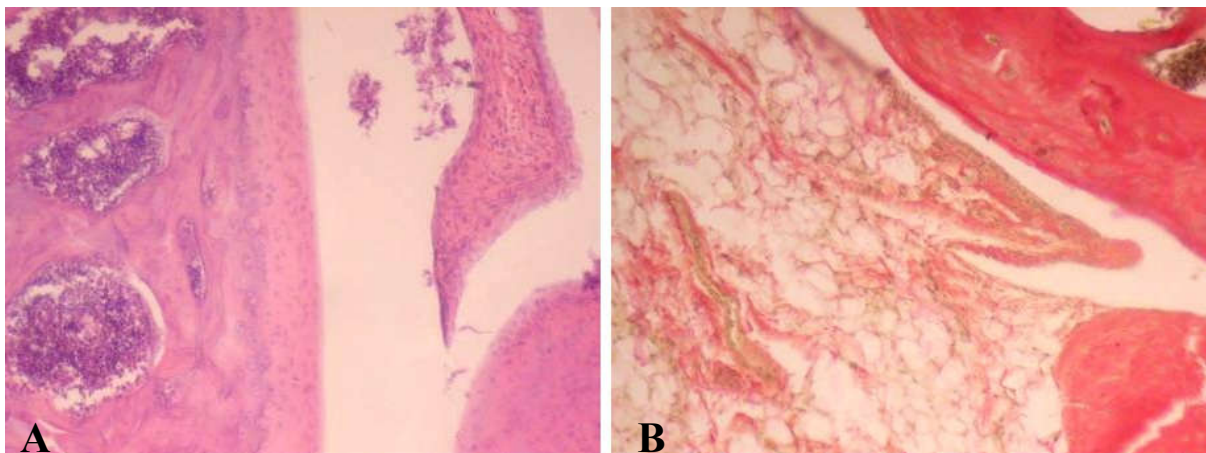


Fig. 5. Morphological structure of knee joint in rat with collagen-induced arthritis under Diclor influence on day 28 of experiment. A – Normal structure of articular cartilage and synovial membrane. Hematoxylin&Eosin staining. ×150. B – No signs of synovial hyperplasia. Van Gieson's picrofuchsin staining. ×150.

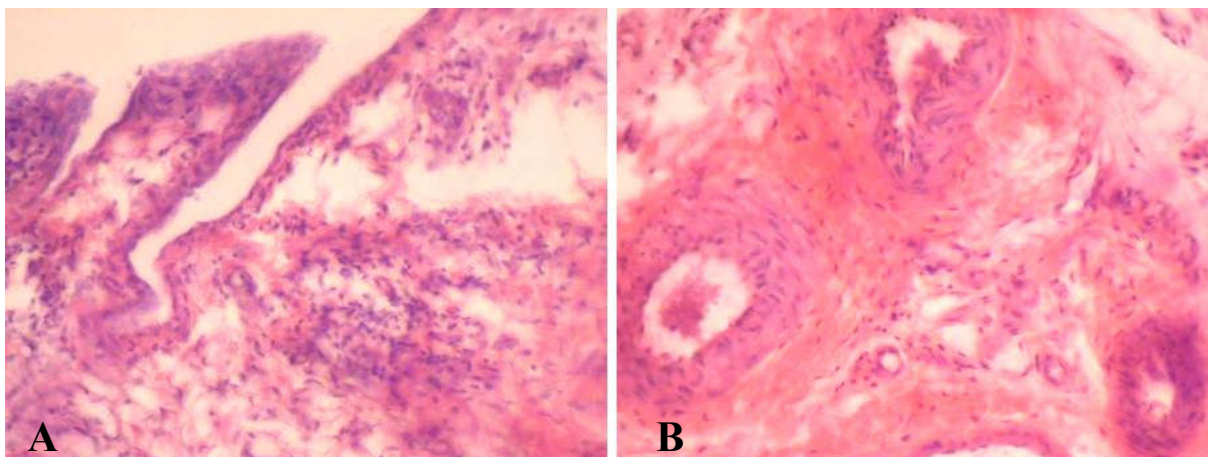


Fig. 6. Morphological structure of knee joint in rat with collagen-induced arthritis under Diclofenac influence on day 28 of experiment. A – Productive synovitis with mixed cellular infiltration. B – Hyperplasia of synovia, plethoric vessels. Hematoxylin&Eosin staining. $\times 150$.

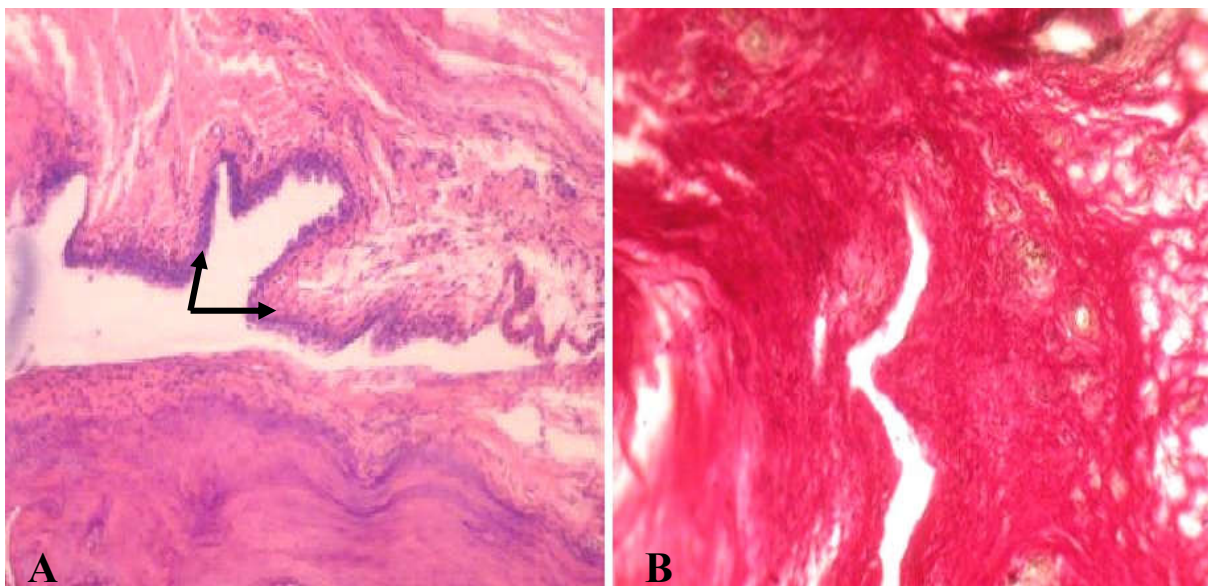


Fig. 7. Morphological structure of knee joint in rat with collagen-induced arthritis under quercetin influence on day 28 of experiment. A – Proliferation of marginal synoviocytes (arrows). Hematoxylin&Eosin staining. $\times 150$. B – Hyperplasia of synovial membrane. Van Gieson's picrofuchsin staining. $\times 200$.

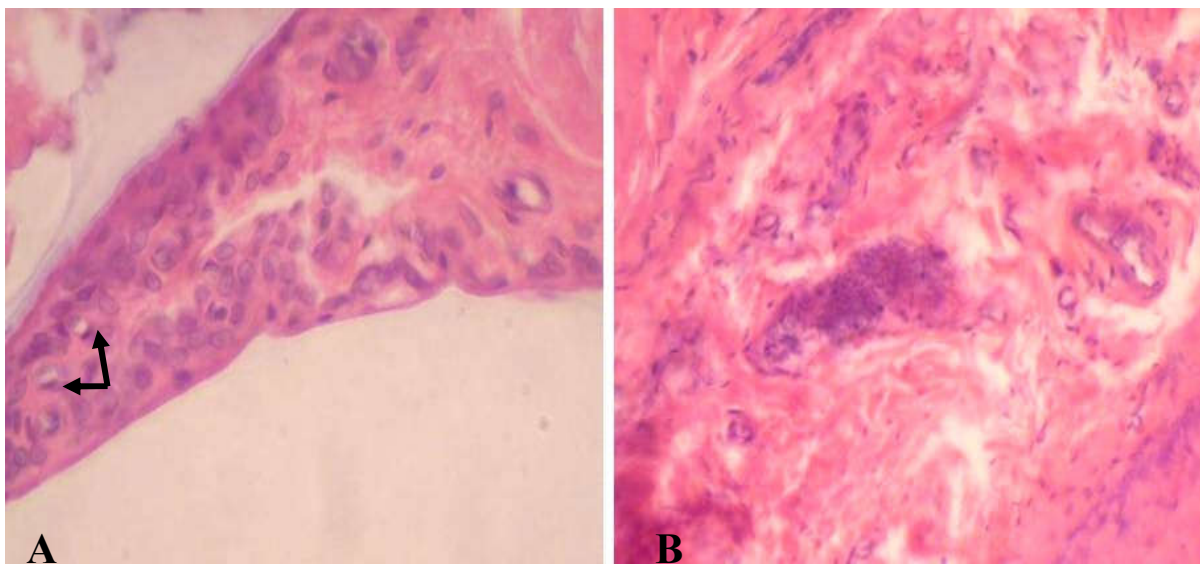


Fig. 8. Morphological structure of knee joint in rat with collagen-induced arthritis under quercetin influence on day 28 of experiment. A – Proliferation of synovial histiocytes, vacuolated cytoplasm of cells (arrows). B – Hyperplasia of dense synovial membrane with dilated plethoric vessels. Hematoxylin&Eosin staining. ×200.

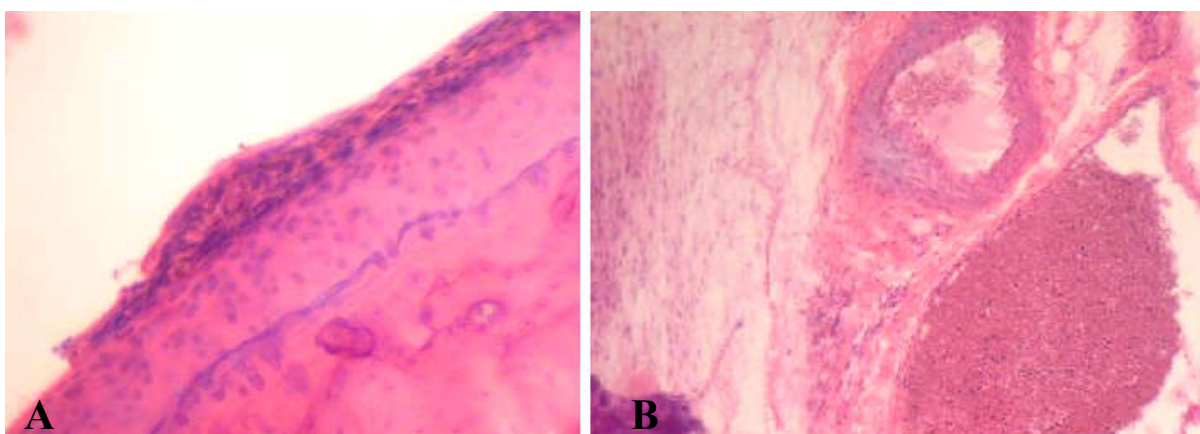


Fig. 9. Morphological structure of knee joint in rat with collagen-induced arthritis under quercetin influence on day 28 of experiment. A – Pannus extending over the surface of thinned cartilage. B – Acute microcirculatory violation in periarticular tissues. Hematoxylin&Eosin staining. ×150.

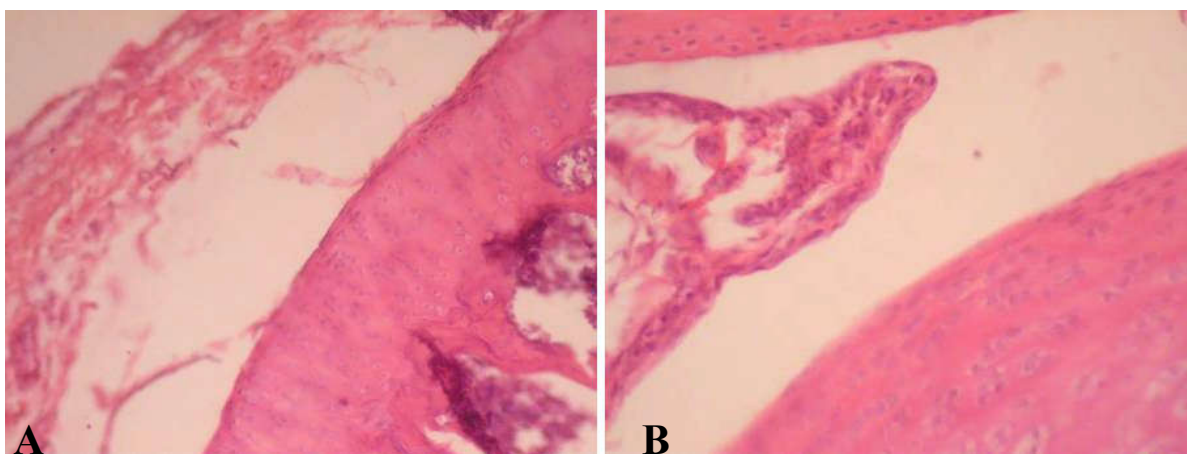


Fig. 10. Morphological structure of knee joint in rat with collagen-induced arthritis under sodium diclofenac influence on day 28 of experiment. A – No changes in synovial membrane and articular cartilage. B – Moderate marginal hyperplasia of synoviocytes. Hematoxylin&Eosin staining. $\times 150$.

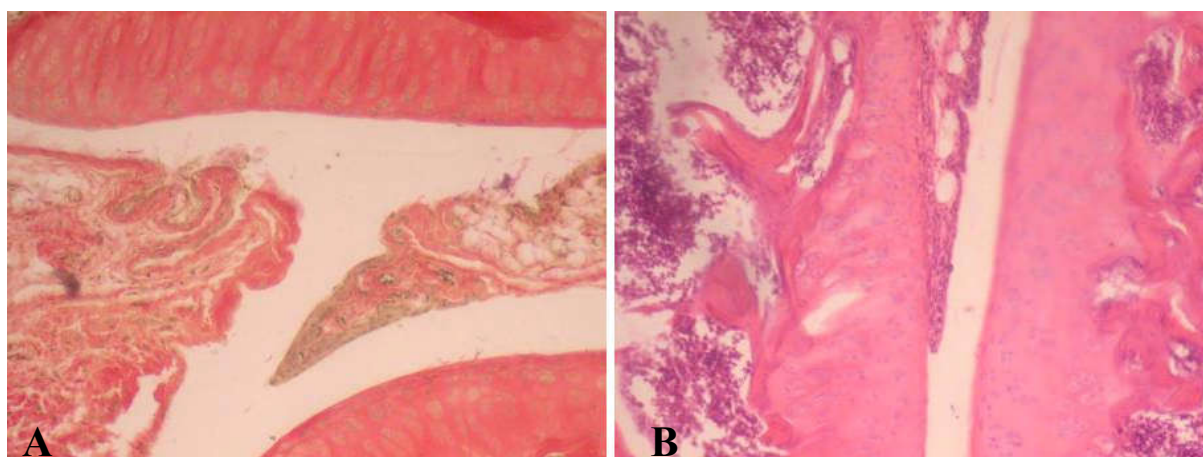


Fig. 11. Morphological structure of knee joint in rat with collagen-induced arthritis under sodium diclofenac influence on day 28 of experiment. A – Synovia with no signs of hyperplasia. Van Gieson's picrofuchsin staining $\times 150$. B – Thin pannus extending over the lateral cartilage surface. Hematoxylin&Eosin staining. $\times 150$.

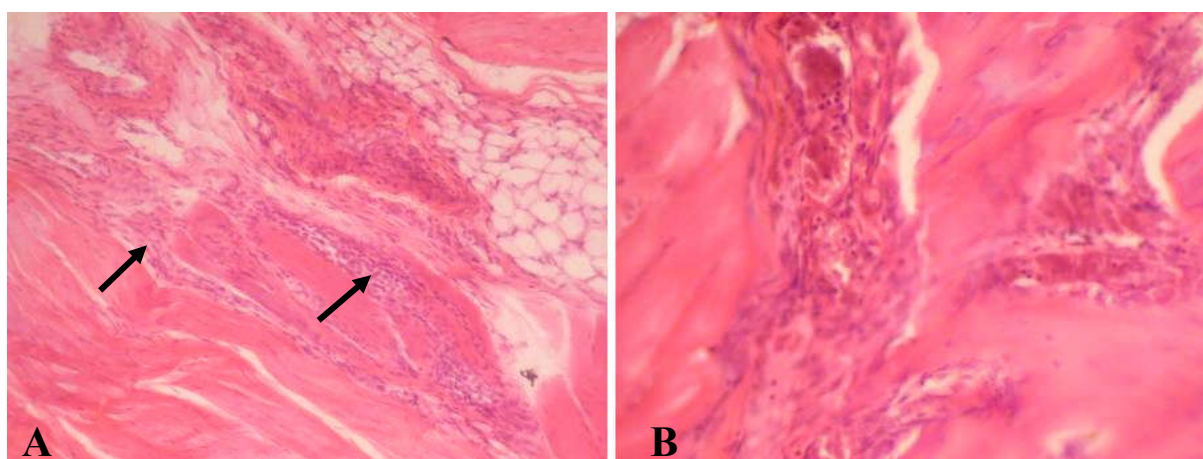


Fig. 12. Morphological structure of knee joint in rat with collagen-induced arthritis under sodium diclofenac influence on day 28 of experiment. A – Proliferation of connective tissue among the muscle fibers (arrows). B – Vascular violation in periarticular tissues. Hematoxylin&Eosin staining. $\times 150$.

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