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THE INFLUENCE OF ULTRA-HIGH FREQUENCY THERAPY ON THE HEALING OF BIOLOGICAL TISSUES IN GUINEA PIGS

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Relevance. Ultra-high frequency (UHF) energy generates significant heat within human and animal tissues. This heat causes blood vessels to dilate, and these smaller vessels can remain dilated for 2-3 days. Electrotherapy is becoming increasingly common in both veterinary and human medicine. Techniques like electroiontophoresis, darsonvalization, faradization, diathermy, and other electrotherapeutic procedures are successfully used to treat a variety of diseases in people and animals.

Purpose: the aim of this study is to investigate the effects of ultra-high frequency therapy on the healing process of biological tissues in guinea pigs.

Materials and methods. The study involved 8 guinea pigs (*Cavia porcellus*) aged between 11 and 12 months. The male guinea pigs weighed between 400 and 620 grams, while the female guinea pigs weighed between 510 and 650 grams. The average weight for the entire group was 534 grams. During the study, the guinea pigs received a varied diet provided by the vivarium, including hay, red pepper, carrots, and cucumbers. To administer UHF therapy, the guinea pigs were carefully transported in a specialized carrier to the Department of Medical and Biological Physics. The department was equipped to carry out the procedure, providing a designated room, necessary medical instruments, and a UHF therapy device ("UHF-30.03 NanEMA") capable of regulating a frequency of 27.12 ± 0.16 MHz and power up to 30W. Scales were used to monitor the animals' condition. Sterile surgical instruments and antibacterial agents were used to create and treat the wound surface. Data analysis was performed using Microsoft Excel.

Results and their discussion. The results indicate that the wound size in the control group also decreased, but the healing rate was slower compared to the group receiving UHF therapy. A healing range from 20 mm to 15 mm throughout the therapy phase demonstrates stable and positive changes in the wound's condition. This is likely due to the stimulation of microcirculation and acceleration of tissue regeneration. In contrast, a healing range from 13 mm to 8 mm in certain UHF therapy groups indicates insufficient stimulation of blood microcirculation processes in the wound area.

Conclusions.

- Ultra-high frequency (UHF) therapy significantly accelerates the wound healing process in guinea pigs, as evidenced by the reduction in wound size in the UHF-treated group.
- UHF therapy not only speeds up healing but also reduces inflammatory responses, which positively affects the overall condition and comfort of the animals.
- UHF promotes the activation of cells responsible for regeneration, such as fibroblasts and macrophages, which accelerates tissue repair processes. Therefore, healing was more consistent in the group that underwent UHF therapy.