

## MORPHOLOGICAL ASSESSMENT OF THE HEALING OF SKIN WOUNDS WITH DIFFERENT METHODS OF REGIONAL TREATMENT

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The main research areas — regenerative biology and medicine. The purpose of the study was to prove the effectiveness of the use of various regional methods of the treatment of skin wounds by evaluating the structural and functional state of the regenerate. The experiment was conducted on 98 outbred male albino rats weighing 200–220 g. The animals were divided into two blocks, since the morphological evaluation of the regenerate was performed in the treatment of aseptic and septic wounds. The first block consisted of one control and two experimental groups. Under anesthesia, the animals were given aseptic wounds (1,0x0,5 cm) on the front surface of the thigh. In the control group, there was no treatment. In the first experimental group, jet sanation (JS) by the 0.9% solution of NaCl

was used to treat aseptic wounds. In the second experimental group, platelet-rich plasma (PRP) was utilized. For the animals of the second block, the modeling of purulent wounds was performed using the culture of *St. aureus*. The second block included one control and three experimental groups. The treatment of purulent wounds began with debridement on the third day from the onset of the experiment. Then, the methods of regional therapy were used in accordance with the selected groups. In the control group, JS was used once daily for the first three days. In the first experimental group, the wound was treated by an alternating magnetic field (AMF) after JS. In the second group, phototherapy was performed after changing bandages. In the third group, JS and PRP were utilized once daily for the first three days of the treatment. The animals were taken from the experiment under anesthesia on the 21<sup>st</sup> day. The material of nearby wound zones was taken and fixed in 10% neutral formalin. For the assessment of the strength of formed scars, the tissue was subject to rupture with fixed force. It was noted that regeneration with the formation of sufficient in strength tissues occurs by the 21<sup>st</sup> day. Tensile strength of aseptic wounds is higher (1.8N) given the treatment by PRP. High tensile strength (after application of AMF-3.1N, PRP-3.3N) is associated with the predominance of fibrotic manifestations. Thus, application of PRP strengthens collagenogenesis, improves the architectonics of fibers and provides the predominance of fibrous component over cellular one.

## QUANTITATIVE ANALYSIS OF MEMANTINE IN BIOLOGICAL FLUIDS

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Studying of the drug in vivo involves determination of concentration of the drug in the blood. Therefore, the aim of this study was to develop a selective and sensitive method for the quantitative analysis of memantine in blood plasma.

According to published data [1] concentration of memantine in the blood plasma is low, that is why we chose high-performance liquid chromatography coupled with mass spectrometry for the quantitative analysis of memantine. Mass spectral acquisition was done in multiple reaction monitoring (MRM) mode using positive electrospray ionization (ESI). There was an intense peak in mass spectrum of memantine obtained by ionization mode in MS-MS analyzer with  $m/z$  180. This peak corresponded to the protonated molecular ion  $(M+H)^+$  of the target substance.

The best chromatographic separation was accomplished on an Agilent XDB-C18 column (2.1mmx30mm, 8 $\mu$ m), with acetonitrile and 0.1% formic acid (65:35, v/v) as the mobile phase at a flow rate of 0.5ml/min. Retention time of memantine was  $1,35 \pm 0,05$  min. Plasma samples were extracted by precipitation with methanol. Quantitative analysis of memantine in plasma was performed by the method of an absolute calibration. Calibration curves were linear