

STUDY OF THE LEVEL OF THE OXIDATIVE MODIFICATION OF PROTEINS IN RATS WITH BURN WOUNDS DURING THE TREATMENT BY GEL WITH NANOPARTICLES OF SILVER AND GLUCOSAMINE

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Introduction. Burns ranks third in the overall structure of injuries. It is known that one of the universal elements of tissue injury during pathological processes is oxidative stress. The use of antioxidants for the treatment of wound healing, ensures prevention of secondary necrosis and stimulate regeneration

Aim. The aim of this study was to investigate the intensity of peroxidation protein in rats with burn wounds in the treatment of gel containing silver nanoparticles stabilized polyvinylpyrrolidone, that corresponding 0.1% Ag and glucosamine (1.0%)

Materials and methods. Nanocomposite of silver, that experimental gel contained, obtained at the Institute of Electric them. E.O. Paton NAS of Ukraine by electron beam evaporation. The comparator was cream "Dermazyn" (producer Germany, series SR0680) containing 1% silver sulfadiazine. Thermal burn injury II degree was reproduced using a special device heated to a temperature of 200 °C. Exposure time by contact plate was 4 seconds. Drugs were applied to the affected areas daily. Blood sampling for analysis performed in two periods: 7 days of treatment, when the scabs began to withdraw and for 21 days (complete healing of all animals). The level of oxidative modification of proteins (OMB) was determined by spectrophotometer reaction of oxidized amino acid residues of proteins with 2,4-aldehyde phenylhydrazon. The concentration of the oxidation products that formed (aldehyde- (APH) and ketodinitrophenylhydrazines (KPH)) is proportional to the optical density. Results processed using program "Statistica", used for nonparametric data the criterion Mann-Whitney ($p > 0.05$).

Results and discussion. During treatment animals were observed accelerate healing of burn wounds, and appropriate normalization of OMP. At The 7 day level APH and KFH exceeded intact control in group control pathology (KP), animals which applied gel with silver nanoparticles and glucosamine and comparator in the 2.0 and 3.4 times; 1.9 and 2.1 times; 1.9 and 2.3 times ($p < 0.05$). After 21 days the contents of OMP at KP group exceeded the norm by 1.5 and 2.1 times (APH and KPH respectively) (processes in the wound, not impeding the process of tissue regeneration. Compared with a group of KP the level of APH at the 21 day was below in animals treated with gel with nanoparticles of silver and glucosamine and cream "Dermazyn" 1.2 times ($p < 0.05$). A level of KPH at the 7 day - 1.6 times and 1.5 ($p < 0.05$); at the 21 day - 1.7 and 1.6 times ($p < 0.05$) respectively.

Conclusions. The treatment of burns animals by gel with silver nanoparticles and glucosamine there was probable decrease intensity of OMP, which reduces the consequences of oxidative stress and promotes healing process of damaged tissues.