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ARTICLE

DOES SYSTEMIC ANTICANCER GEMCITABINE COMPROMISE ORAL SOFT TISSUE WOUND HEALING?

ABSTRACT:

Background: Numerous types of cancer are of substantial medical and social concern, posing a major challenge to modern medicine. Chemotherapeutic drugs include the use of nucleosides, which are composed of nucleic acid and sugar.

Objective:This study aims to assess the impact of systemic chemotherapeutic drugs at a therapeutic dose on the wound healing process of the oral mucosa.

Material and Methods: 30 healthy rats were randomly divided into two main groups based on the study material, 15 rats in each group. Group A (control) was given a single dose of normal saline (1ml/kg, intraperitoneal), and Group B (study) a single injection of gemcitabine (50 mg /Kg, intraperitoneal). After anesthesia, a full-thickness soft tissue incision (0.5 cm length) on the right side of the buccal mucosa was made in the animals of both groups. Each group was subdivided according to the time of sacrifice into 3, 7, 14 days after surgery, at the end of the experimental periods, specimens were collected for histopathological study, and samples of blood were obtained from retro-orbital venous plexus and collected in microfuge tubes and levels of antioxidant enzymes were measured by ELISA. The data were analyzed statistically at a 0.05 level of significance.
Results: Gemcitabine delayed the onset of wound cascade (inflammation and re-epithelization) which lead to worsening healing of the oral tissue; it also resulted in a decrease of the antioxidant activity of glutathione peroxidase and catalase, as well as activated caspase 3, which induces cell apoptosis.

Conclusion: Gemcitabine showed negative feedback on oral tissue wound healing through delayed wound healing cascade and by inducing apoptosis.