

OR-76**Evaluating the Osteogenesis Activity of the Newly Formulated Biodegradable Chips Containing Benzylisothiocyanate in Chitosan Base as a Targeted Drug Delivery Followingtooth Extraction in Rat**

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Objectives: The objectives of this study were to develop a biodegradable periodontal chips containing benzylisothiocyanate (BITC) and to evaluate its potential effect on the process of tooth socket healing after extraction. **Materials and Method:** Biodegradable periodontal chips were formulated from benzylisothiocyanate and chitosan. Eighteen adult healthy male Sprague Dawley rats were used for this study. The rats were sedated and dental anesthesia was injected. The upper central incisor was extracted. Animals divided into 3 groups; group 1 rats were negative control, group 2 sockets were filled with chitosan chip alone and group 3 sockets were filled with chitosan plus BITC chip. Animals sacrificed after 3 weeks and the maxillas were resected. Serials sections performed and stained with Hematoxyline and eosin for histological analyses. For immunohistochemistry two makers were used, osteocalcin and proliferating cell nuclear antigen (PCNA). Results Histological observations of the sockets in control group showed that the formation of bone matrix trabeculae was retarded and core of the bone were occupied mainly by connective tissue cells. Sockets of Group 2 contain bone matrix trabeculae along with numerous osteoblast, and osteocytes in their lacunae. In addition there were moderate granulation tissues. Sockets of Group 3 demonstrated the newly formed socket bone underwent remodelling with numerous osteoblast and osteocytes in their lacune occupied most of the spaces along with numerous central canals with granulation tissues. Immunohistochemistry staining, sockets of Group 1 showed numerous proliferating connective tissue cells. Sockets of Group 2 showed few proliferating connective tissue cells with osteocalcin protein, and sockets of group 3 showed inhibition of proliferating of connective tissue cells and bone remodelling with increase in osteocalcin protein (osteogenesis). **Conclusion:** Newly formulated chips accelerated extracted socket healing. Osteogenesis and bone matrix formation were more prominent in groups treated with BITC chips. It could be used to enhance healing after tooth extraction including wisdom tooth.

Keywords: Benzylisothiocyanate, chitosan, biodegradables chip, tooth extraction, osteogenesis.
