

EFFECTIVENESS OF LOHMAN CHICKEN BONE WASTE ON OSTEOCLAST CELLS IN SOCKET PRESERVATION

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BACKGROUND: Socket preservation is a widely adopted procedure aimed at minimizing post-extraction alveolar bone resorption, preserving ridge dimensions, and facilitating implant placement. Hydroxyapatite-based bone grafts derived from Lohmann chicken bone waste offer a promising biomaterial for bone regeneration while contributing to sustainable waste management.

METHOD: This laboratory experimental study employed a post-test only control group design using 24 male Wistar rats divided into six groups. Socket preservation was performed using either Lohmann chicken bone graft or a commercially available bone graft material (control). Animals were sacrificed on days 7, 14, and 21. Histological assessment with Hematoxylin-Eosin (HE) staining was conducted to quantify osteoclast cells. Data were analyzed using an independent t-test with a significance level of $p < 0.05$.

RESULTS & DISCUSSION: The Lohmann chicken bone graft group demonstrated a progressive reduction in osteoclast cell counts across all observation periods compared to the control group, with the most pronounced decrease on day 21. Although statistical analysis revealed no significant differences ($p > 0.05$), the consistent downward trend indicates favorable bone remodeling activity. These findings align with previous studies highlighting the osteoconductive and bioactive properties of hydroxyapatite derived from animal bone sources.

CONCLUSION: Bone graft derived from Lohmann chicken bone waste shows potential effectiveness in reducing osteoclast cell activity during socket preservation, supporting alveolar bone regeneration while providing an innovative solution for organic waste utilization. Further studies are recommended to optimize processing techniques and evaluate clinical applicability.

KEYWORDS: Socket Preservation, Osteoclast, Bone Graft, Lohmann Chicken Bone, Hydroxyapatite