

ABSTRAK

PENGARUH PERENDAMAN AKAR GIGI AVULSI PADA PUTIH TELUR AYAM RAS DAN AYAM KAMPUNG TERHADAP VIABILITAS SEL LIGAMEN PERIODONTAL

(Studi *In Vitro* pada Gigi Insisivus Mandibula Tikus *Wistar*)

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Latar Belakang. Keberhasilan replantasi gigi avulsi dipengaruhi oleh viabilitas sel ligamen periodontal selama periode ekstraoral, sehingga diperlukan media penyimpanan gigi avulsi yang bersifat fisiologis seperti putih telur ayam. **Tujuan.** Penelitian ini bertujuan untuk mengetahui pengaruh perendaman gigi avulsi pada putih telur ayam ras dan ayam kampung terhadap viabilitas sel ligamen periodontal. **Metode.** Penelitian ini merupakan eksperimen laboratoris *in vitro* dengan rancangan *post-test only control group design*. Jumlah sampel ditentukan menggunakan G*Power 3.1. Sebanyak 50 gigi insisivus mandibula tikus *Wistar* dibagi menjadi lima kelompok, yaitu putih telur ayam ras, putih telur ayam kampung, HBSS, air mineral, dan kontrol tanpa perendaman yang diproses langsung. Sampel direndam selama 60 menit pada suhu ruang. Viabilitas sel dihitung menggunakan metode eksklusi *Trypan Blue* dengan hemositometer. Data dianalisis menggunakan uji Kruskal–Wallis dan uji Mann–Whitney. **Hasil.** Hasil menunjukkan median persentase viabilitas sel ligamen periodontal tertinggi pada kelompok tanpa perendaman (95,04%), HBSS (91,91%), putih telur ayam kampung (91,77%), putih telur ayam ras (91,08%), serta air mineral (73,19%). Persentase viabilitas sel ligamen periodontal pada kelompok putih telur ayam ras, putih telur ayam kampung, dan HBSS tidak menunjukkan perbedaan bermakna ($p > 0,05$), serta menunjukkan perbedaan bermakna dibandingkan kelompok air mineral dan tanpa perendaman ($p < 0,05$). **Simpulan.** Putih telur ayam ras dan ayam kampung berpotensi menjadi media alternatif penyimpanan gigi avulsi karena memiliki efektivitas yang sebanding dengan HBSS dalam mempertahankan sel ligamen periodontal secara *in vitro* dalam waktu 60 menit perendaman.

Kata kunci: avulsi gigi, HBSS, ligamen periodontal, putih telur, viabilitas sel

ABSTRACT

EFFECT OF AVULSED TOOTH ROOT IMMERSION IN EGG WHITE FROM LAYER AND INDIGENOUS CHICKENS ON PERIODONTAL LIGAMENT CELL VIABILITY

(An In Vitro Study on Wistar Rat Mandibular Incisors)

Ghaida Zahra Mahardika

Background. The success of avulsed tooth replantation is influenced by the viability of periodontal ligament cells during the extraoral period; therefore, a physiological storage medium for avulsed teeth is required, such as chicken egg white. **Purpose.** This study aimed to determine the effect of immersing avulsed teeth in egg white from layer and indigenous chickens on periodontal ligament cell viability. **Methods.** This in vitro experimental study used a post-test only control group design. The sample size was determined using G*Power 3.1. Fifty mandibular incisor teeth from Wistar rats were divided into five groups: layer chicken egg white, indigenous chicken egg white, HBSS, mineral water, and a no-storage control group processed immediately. Samples were immersed for 60 minutes at room temperature. Cell viability was assessed using the Trypan Blue exclusion method with a hemocytometer. Data were analyzed using the Kruskal–Wallis and Mann–Whitney tests. **Result.** The highest percentage of periodontal ligament cell viability was observed in the no-storage group (95.04%), HBSS (91.91%), indigenous chicken egg white (91.77%), layer chicken egg white (91.08%), and mineral water (73.19%). The percentage of periodontal ligament cell viability among the layer chicken egg white, indigenous chicken egg white, and HBSS groups showed no significant difference ($p > 0.05$), but differed significantly from the mineral water and no-immersion groups ($p < 0.05$). **Conclusion.** Egg white from layer and indigenous chickens shows potential as an alternative storage medium for avulsed teeth, with comparable effectiveness to HBSS in maintaining periodontal ligament cell viability in vitro following 60 minutes of immersion.

Keywords: egg white, HBSS, periodontal ligament, tooth avulsion, cell viability