ABSTRACT

MECHANISM OF ACTION OF BONE GRAFT
FROM COMBINATION OF *Anadara granosa's SHELL AND Stichopus hermanni*
ON ALVEOLAR BONE HEALING PROCESS AFTER TOOTH EXTRACTION

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Background: *Complication post-extraction can cause alveolar bone loss. Hydroxyapatite-tricalcium phosphate (HA-TCP) is one of potential bone graft materials that can be synthesized from Anadara granosa's shell. On the other side, Stichopus hermanni contain beneficial hyaluronic acid to stimulate healing procces.* ***Purpose:*** *This research aims to investigate mechanism of action of bone graft from Anadara granosa shell-Stichopus hermanni on alveolar bone healing process after tooth extraction.* ***Material and Methods:*** *sixty male Wistar rats were divided into ten groups. Lower left incisor was extracted, then given placebo for group control (C), treatment group was administered with scaffold from Anadara granosa's shells (AG), and a treatment group with scaffold from blood cockle shell-Stichopus hermanni with concentration of 0.4%, 0.8%, and 1,6% (AGSH1-AGSH2-AGSH3). We made bone graft from combination of Anadara granosa-Stichopus hermanni extract using freeze-dried method. The socket was sutured by* silk braid *immediately. 3th-7th days after removal, animals are sacrificed for mandibles. Expression of CD44, IL-10, and BMP2 were examined with immunohistochemistry, as well as osteoblas, blood vessel, osteoclast and woven bone were examined with hematoxillin eosin. Data were analyzed with univariate test followed by post-hoc test ($p<0.05$).* ***Results:*** *The results showed CD44, IL-10, BMP2 expression, blood vessels, osteoblast, and large of woven bone were increased, while osteoclast was decreased. Path analysis correlation showed the relationship causalistic between Anadara granosa's shell-Stichopus hermanni affect CD44, IL-10, BMP2, blood vessels, osteoblast, osteoclast and woven bone.* ***Conclusions:*** *Bone graft from combination of Anadara granosa's shell-Stichopus hermanni 0.8% effective to accelerate the alveolar bone healing process after tooth extraction*

Keywords*: Anadara granosa's shell, Stichopus hermanni, alveolar bone healing, tooth extraction*