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Stimulasi insulin like growth factor -1 on secondary cartilage of mandibular rat condyle: a new orthodontic therapy for micrognath mandible

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Abstract

This study is the further study about IGF-1 stimulation in vitro prechondrocyte mandybular secondary cartilage through primary chondrocyte culture from mandybular rat condyle (*Rattus neovergicus*) : as a new inovation orthodontic therapy for dentofacial harmonization level. In this study, in vivo investigation about IGF-1 stimulation for rat mandybular condyle growth (*Rattus noevegicus*) 14 days old. The study cunducted in two steps: (1) To prove the chondrocyte mandybular rat condyle growth; (2) the expresion of IGF-1 receptor in the chondrocyte mandybular rat condyle after direct eksogenous IGF-1 stimulation. The study has done in Laboratoiun in vitro Faculty of Verinary and Laboratorium Tropical Disease Airlangga University. The sampel was used 18 rat (*Rattus noevegicus*) Wistar strain with 17-20 grams each body weight. This homogen sampel had divided in 3 group investigation. The aplication of exogenous IGF-1 was directly injected to mandybular rat condyle. Furthermore, the rat was euthanasia with ether. The head was split from the body and washed in 70 % alcohol and medium. The mandibular rat condyle was ready for paraffin block and the investigation of IGF-1 receptor expression through immunohystochemistry technic. All the data revealed ware analysed with ANOVA test. The conclusion of this study : exogenous IGF-1 with the single dose 50 ng/ml could be stimulate the growth of mandybular rat condyle (*Rattus noevegicus*) in vivo, after 14 days stimulation. The stimulation activity of exogenous IGF-1 through IGF-1 receptor. This was proved that the IGF-1 receptor expresion significantly were increased in every investigation.

Key words: dentofacial harmonization level; the growth of mandybular rat condyle; exogenous IGF-1; IGF-1 receptor.