ABSTRACT

Fachrizal, Dian. 2015. **The Effectiveness of Nano Chitosan on Odontoblast Cell Proliferation in Forming of Reparative Dentine on Pulp Capping Treatment at Molar Tooth of Wistar Rats (Rattus novergicus)**. Final Assignment, Dentistry Program, Faculty of Medicine, Brawijaya University. Supervisors: (1) Dr. M. Chair Effendi, drg., SU., Sp.KGA (2) Ambar Puspitasari, drg., Sp.KGA

The opened dental pulp can cause a pulp inflammation and risks of becoming pulpitis. Direct pulp capping is a technique widely used to seal directly above the opened dental pulp. Chitosan and its derivatives in nanoparticle form, which are called by nano chitosan can perform stimulation (excited) in the cell system more effectively because it can pass through cell membranes in organisms easily and interact with biological systems so that it can be used as a direct pulp capping material. The purpose of this study is to prove the effectiveness of nano chitosan in increasing the odontoblasts cell proliferation in forming of reparative dentine that can be used as direct pulp capping alternative in open dental pulp in the future. This study was conducted using samples of wistar rats which were divided into 4 groups, which are applied with eugenol, MTA, chitosan and nano chitosan. The rats were dissected on the 30^{th} day, and a mandible decalcification was done, continued by making histopathological preparations which were further examined using a camera microscope, then measurements and data analysis were done. The results shows a significant differences ($p<0,05$) in odontoblast cell proliferation in forming of reparative dentine which given by nano chitosan compared to the negative control group, positive control and treatment group given by chitosan. Based on this study, it can be concluded that nano chitosan can increase the odontoblast cell proliferation in forming of reparative dentine so tooth's vitality will be more protected.

Keywords : *chitosan, caries, nanoparticle, pulp capping, odontoblast*