

To Commemorate the 66th Anniversary of
The Faculty of Dentistry
Universitas Gadjah Mada
Yogyakarta, Indonesia

SCIENTIFIC MEETING 2014

“The Role of Bone in Dental Treatment”

PROGRAM BOOK

February 28th & March 1st, 2014
HOTEL INNA GARUDA YOGYAKARTA

    

Abstract of Oral Presentation O-20

Release Profile Of Bisphosphonates Risedronate Using Hydrogels As A Carrier

Tita Ratya Utari*, Pinandi Sri Pudyani**, Widya Asmara***, IkaDewi Ana****

* Doctoral Department of Dental Science, Faculty of Dentistry, GadjahMada University

** Department of Orthodontic, Faculty of Dentistry, GadjahMada University

***Department of Microbiology, Faculty of Veterinary, Gajah Mada University

**** Department of Biomedic, Faculty of Dentistry, GadjahMada University

Background: Bisphosphonates is a group of drug that can be able to prevent the loss of bone mass by inhibiting osteoclast that suppress bone turnover. Some studies have been done to evaluate the advantage of bisphosphonate in dentistry such as orthodontic, implantology, and periodontic using different experimental model. Bisphosphonates has clinically proven effective to prevent bone loss that cause of periodontal inflammation. The use of bisphosphonates in specific area with local effect instead of systemic effect was expected when this drug administrated clinically. Drug delivery system is a drug administration system using such carrier. This system brings a lot of benefits as an active compound that can be put into carrier, drug release time can be controlled and other active compound might be safe. Active compound of bisphosphonates risedronate that carry by gelatin hydrogel and applied topically were expected to give an optimal local effect in dentistry without systemic effect. *Objective:* To discover

release profile of bisphosphonate risedronate using gelatin hydrogels as carrier compared with no carrier. Materials and Methods: The preparation of gelatin hydrogel microspheres containing bisphosphonate risedronate concentration of 500 $\mu\text{mol/L}$ and 250 $\mu\text{mol/L}$, pure bisphosphonate without carrier, dissolved in PBS. Trials of the bisphosphonate risedronate release were performed using UV-Vis Spectrophotometer wavelength λ 262 nm at intervals of 1, 3, 6, 24 hours with three replications in each group. *Result:* There are differences ($P < 0.05$) bisphosphonate risedronate release with gelatin hydrogel as a carrier compared with no carrier where release rate of bisphosphonate risedronate with gelatin hydrogel carrier is slower. *Conclusion:* Gelatin hydrogels carrier can slow the drug release rate of bisphosphonates risedronate hence expected to administer topically with local effect without systemic effect.

Keywords: Bisphosphonates risedronat, gelatin hydrogels, drug release.