

PERBEDAAN EFEKTIFITAS ENZIM β -1,3-GLUKANASE *Vigna unguiculata* DAN PAPAINE *Carica papaya* PADA PELEPASAN PLAK GIGI TIRUAN

ABSTRAK

Pendahuluan. Akumulasi plak pada gigi tiruan mengakibatkan beberapa perubahan patologis pada mukosa rongga mulut seperti *denture stomatitis*, *halitosis* dan karies. Komponen matriks plak terbanyak terbentuk dari kompleks protein dan polisakarida. Alternatif pembersih gigi tiruan berbahan enzim dibutuhkan untuk menghidrolisis plak pada gigi tiruan. *Papain* adalah enzim proteolitik yang menghidrolisis protein dan enzim β -1,3-glukanase adalah karbohidrase yang menghidrolisis polisakarida. **Tujuan.** Tujuan penelitian ini adalah menganalisis perbedaan efektifitas enzim β -1,3-glukanase *Vigna unguiculata* dan *Papain Carica papaya* pada pelepasan plak gigi tiruan. **Metode.** Penelitian yang dilakukan adalah penelitian eksperimental laboratoris menggunakan *Randomized post test only control group design*. Setelah pemakaian gigi tiruan selama 24 jam, gigi tiruan direndam dalam 100 ml larutan PBS, 100 ml larutan enzim *Papain*, 100 ml larutan enzim β -1,3-glukanase selama 10 menit. Larutan hasil hidrolisis plak oleh PBS dan enzim di vortex selama 2 menit, kemudian direndam dalam air es selama 15 menit, di *centrifuge* 3000 rpm 5-10° selama 10 menit. Supernatan dipisahkan dan dianalisis. Dilakukan pembacaan kekeruhan dengan panjang gelombang 480 nm. **Hasil.** Enzim β -1,3 glukanase 2 mg/ml menunjukkan hasil hidrolisis tertinggi dengan rerata (68,77%) dibandingkan dengan enzim *Papain* (44,86%). Hidrolisis terendah diperoleh PBS dengan rerata (3,24%). **Kesimpulan.** Enzim β -1,3 glukanase adalah enzim yang efektif menghidrolisis plak gigi tiruan dibandingkan dengan enzim *Papain*.

Kata kunci : *Papain*, β -1,3 glukanase, plak gigi tiruan

DIFFERENCES IN ENZYME EFFECTIVENESS OF β -1,3-GLUCANASE *Vigna unguiculata* AND PAPAINE *Carica papaya* IN HYDROLYSIS OF DENTURE PLAQUE

ABSTRACT

Background. Accumulation of denture plaque result in pathological changes in the oral mucosa such as denture stomatitis, halitosis and caries. Most plaque matrix is formed by 30% protein and polysaccharide complexes. Alternative enzyme solution denture cleanser is required for hydrolysis of denture plaque. Papain is a proteolytic enzyme that hydrolyze proteins and enzymes β -1,3-glucanase is a hydrolase which hydrolyze polysaccharides. **Purpose.** The aim of this study is to analyze differences in enzyme effectiveness between β -1,3-glucanase *Vigna unguiculata* and Papain *Carica papaya* in hydrolysis of denture plaque. **Method.** This research is laboratory experimental with post test only control group design. After 24 hours usage of denture, denture is soaked in a solution of 100 ml PBS, Papain and β 1-3 glucanase enzyme based on variant concentration 0,5 mg/ml, 1 mg/ml, 2 mg/ml for 10 minutes. The solution from plaque hydrolysis in PBS and enzyme vortex in 2 minutes, then soaked in ice water for 15 minutes, centrifuge at 3000 rpm 5-10° for 10 minutes. The supernatant separated and analyzed. Turbidity readings performed in spectrofotometer with a wavelength of 480 nm. **Result.** 2 mg/ml of β -1,3 glucanase enzyme showed the highest amount of hydrolysis with a mean percentage (68,77%) compared with Papain enzyme (44,86%). Lowest hydrolysis by PBS with the average percentage of (3.24%). **Conclusion.** β -1,3-glucanase is effective enzyme in hydrolysis of denture plaque than Papain.

Keywords: Papain, β -1,3-glucanase, denture plaque.