

INTISARI

Plak gigi merupakan faktor penyebab berbagai penyakit gigi dan mulut. Plak gigi terbentuk dari berbagai komponen terutama bakteri yang melekat kuat pada substrat dengan membentuk matriks ekstraseluler. *Streptococcus mutans* memiliki adhesin berupa glukon ekstraseluler yang diproduksi oleh aktivitas enzim glukosiltransferase (GTF) yang penting dalam pembentukan plak dan perkembangan karies. Ekstrak daun rambutan mengandung flavonoid, saponin dan tanin yang mempunyai potensi sebagai antiadhesi bakteri. Penelitian ini bertujuan untuk mengetahui pengaruh ekstrak daun rambutan terhadap perlekatan *S. mutans* ATCC 25175 *in vitro*.

Metode yang digunakan pada penelitian ini adalah eksperimental laboratoris pada biakan murni *S. mutans* ATCC 25175. Hasil penelitian pendahuluan menunjukkan bahwa *Minimum Inhibitory Concentration* (MIC) ekstrak daun rambutan adalah 4%. Subjek dikelompokkan dalam dua kelompok yaitu perlakuan 2%, 4%, dan 8% ekstrak daun rambutan serta kontrol positif klorheksidin glukonat 0,12% masing-masing 16 jam inkubasi pada 37°C. Tiap subkelompok terdiri atas 8 ulangan. Uji adhesi dilakukan pada *microplate* 96 wells dengan kristal violet 1%. Nilai densitas optik diukur menggunakan *microplate reader* pada $\lambda = 540$ nm, selanjutnya persentase penghambatan adhesi dihitung dengan rumus (Quave dkk., 2008). Data hasil penelitian dianalisis dengan uji *Kruskal Wallis* ($p < 0,05$) dan dilanjutkan uji *Mann-Whitney*.

Hasil penelitian menunjukkan terdapat perbedaan bermakna antara persentase penghambatan perlekatan *S. mutans* oleh klorheksidin 0,12%, ekstrak daun rambutan 2%, 4%, dan 8%. Hasil uji *Mann-Whitney* menunjukkan perbedaan bermakna antara kontrol (klorheksidin 0,12%) dengan ekstrak 2% maupun 8%. Perbedaan bermakna juga diperoleh pada perbandingan semua konsentrasi bahan uji, sedangkan perbedaan tidak bermakna antara kontrol dengan ekstrak 4%. Berdasarkan hasil tersebut, maka disimpulkan bahwa ekstrak daun rambutan 4% mempunyai kemampuan untuk menghambat perlekatan *S. mutans* ATCC 25175 *in vitro* yang sama dengan klorheksidin.

Kata kunci: *Nephelium lappaceum*, *S. mutans* ATCC 25175, Klorheksidin, antiadhesi

ABSTRACT

Dental plaque is causal factor of dental and mouth disease. Dental plaque is formed by many components especially bacteria. Bacteria strongly attach to substrate by forming extracellular matrix. Streptococcus mutans has extracellular glucan as adhesin that produced by glucosyltransferase enzyme (GTF) activity. This component is crucial in plaque forming and caries development. Rambutan leaf extract contains flavonoid, saponin, and tannin that have anti adherence potency. The aim of this study was to investigate the effect of rambutan leaf extract to S. mutans ATCC 25175 adherence in vitro.

This laboratory experimental study was done on S. mutans ATCC 25175 pure culture. It was confirmed from preliminary experiment tha the minimum inhibitory concentration (MIC) result of rambutan leaf extract was 4%. Subjects were classified into two group. Treatment group was exposed to 2%, 4%, and 8% rambutan leaf extract, whereas positive control was treated with 0,12% chlorhexidine gluconate for 16 hours. Each group was performed in 8 replications. Adhesion test was accomplished in microplate 96 wells that was stained with 1% violet crystal. The optical density was measured by microplate reader on $\lambda = 540$ nm, furthermore the anti adherence percentage value was calculated using formula (Quave dkk., 2008). The results represented as ratio data were analyzed by Kruskal Wallis test ($p > 0,05$) and Mann-Whitney test.

The result showed that there were significant differences in S. mutans anti adherence percentage among 0,12% chlorhexidine, 2%, 4%, and 8% rambutan leaf extract. Mann-Whitney test result showed that there were significant differences between control (0,12% chlorhexidine) and 2% extract and also 8% extract. There were significant differences found in all of the concentrations in this study. No significant difference was found in control and 4% extract. It is concluded that 4% rambutan leaf extract has equal ability to inhibit S. mutans ATCC 25175 compared to 0,12% chlorhexidine gluconate adhesion in vitro.

Keywords: Nephelium lappaceum, S. mutans ATCC 25175, Chlorhexidine, anti adhesion