

# Pengaruh pemaparan protein saliva anak dan dewasa terhadap pembentukan biofilm bakteri streptococcus mutans = Effect of child and adult salivary protein exposure on the formation of Streptococcus mutans Biofilms

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## Abstrak

Pendahuluan: protein saliva merupakan komposisi yang terkandung dalam saliva dan berperan penting bagi keseimbangan ekosistem rongga mulut manusia. Total konsentrasi protein saliva pada setiap individu bervariasi tergantung pada usia individu tersebut. Banyak dari protein saliva berfungsi untuk memproteksi rongga mulut dengan aktivitas antimikroba yang dimilikinya. Di sisi lain, saliva juga dapat mendukung pertumbuhan mikroorganisme rongga mulut dengan membentuk pelikel. Streptococcus mutans bersama dengan pelikel saliva berpartisipasi dalam adhesi bakteri di permukaan gigi. Selanjutnya mereka akan berkoordinasi sehingga membentuk dental plaque. Tujuan: menganalisis perbedaan massa bakteri dan viabilitas Streptococcus mutans setelah pajanan protein saliva subjek anak dan subjek dewasa. Metode: sampel saliva subjek anak dan subjek dewasa dilakukan uji Bradford untuk mengetahui total protein saliva. Kemudian dilakukan perhitungan massa biofilm dengan uji crystal violet staining dan viabilitas bakteri dengan TPC. Setelah itu dilakukan uji One-way Anova Hasil: Nilai signifikansi uji statistic menunjukkan  $> 0,05$  sehingga tidak terdapat perbedaan bermakna massa bakteri maupun viabilitas bakteri Streptococcus mutans setelah pajanan protein saliva yang berasal dari subjek anak dan subjek dewasa secara statistik. Total konsentrasi protein saliva anak dan dewasa condong berbeda. Kesimpulan: Tidak terdapat perbedaan dampak pemaparan protein saliva asal subjek anak dan subjek dewasa terhadap pembentukan biofilm bakteri Streptococcus mutans ditinjau dari massa biofilm dan viabilitas bakteri.

.....Background: Salivary protein is the composition contained in saliva and plays an important role in the balance of the human oral cavity ecosystem. The total salivary protein concentration in each individual varies depending on the age of the individual. Many of salivary proteins function to protect the oral cavity with their antimicrobial activity. Therefore, saliva can also support the growth of oral microorganisms by forming pellicles and as a source of nutrition to bacteria. Streptococcus mutans together with the salivary pellicle participate in the adhesion of bacteria on the tooth surface. Furthermore, they will coordinate to form dental plaque. Objective: to analyze the differences in bacterial mass and viability of Streptococcus mutans after the exposure of the salivary proteins from children and adult subjects. Methods: Bradford test was used to determine the total of salivary protein in saliva samples from children and adult subjects. The biofilm mass was calculated by using crystal violet staining and bacterial viability by TPC. The distribution was analyzed using the One-way Anova test Results: The p value of the statistical test shows  $> 0,05$  so that there were no significant difference in bacterial mass and viability of Streptococcus mutans after

exposure of salivary protein from children's or adult's saliva statistically. However, the total salivary protein concentrations of children and adults tend to be different. Conclusion: There was no difference in the impact of salivary protein exposure from children's and adult's saliva on the formation of *Streptococcus mutans* biofilm in terms of biofilm mass and bacterial viability.