Pengaruh Spent Medium Isolat Bakteri Usap Lidah Individu Baduy Terhadap Biofilm In Vitro Pada Bakteri Usap Lidah Individu Non-Baduy Dalam Kondisi Aerob = Effects of Spent Medium Bacterial Isolate of The Baduy Tongue Swab on In Vitro Biofilm of Non-Baduyâs Tongue Swab Bacterial Under Aerobic Conditions

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Abstrak

Latar Belakang: Baduy merupakan suku yang masih melestarikan budayanya tersendiri tanpa dipengaruhi oleh faktor luar yang menyebabkan variasi genetik dan dapat mempengaruhi komposisi mikroba dalam rongga mulut. Variasi mikroba dan status kebersihan rongga mulut berhubungan dengan pertumbuhan biofilm yang dipengaruhi oleh hasil metabolit sejumlah mikroorganisme, seperti protein dan nitrat. Protein berperan penting dalam perlekatan mikroba dan mendukung adhesi intraselular serta komunikasi antar mikroba sehingga meningkatkan pembentukan biofilm. Keberadaan NO dalam rongga mulut dapat mengurangi tingkat c-di-GMP yang menyebabkan terjadinya dispersi pada biofilm sehingga dapat memecah matriks biofilm. Tujuan: Mengamati pengaruh spent medium isolat bakteri usap lidah individu Baduy terhadap viabilitas sel dan massa biofilm in vitro bakteri usap lidah individu Non-Baduy dalam kondisi aerob. Metode: Pemeriksaan konsentrasi protein dari spent medium isolat bakteri usap lidah Baduy dilakukan dengan uji Bradford, uji Griess untuk menetapkan konsentrasi nitrat, uji Crystal Violet untuk menetapkan nilai optical density yang merepresentasikan massa biofilm, dan uji Total Plate Count (TPC) yang menentukan viabilitas sel. Masing-masing perlakuan dibedakan berdasarkan konsentrasi protein dan nitrat pada spent medium 5% dan 10% dengan waktu inkubasi selama 24 jam dalam kondisi aerob. Selanjutnya data diolah secara statistik menggunakan uji komparasi One-Way ANOVA, Independent T-test, dan Mann-Whitney U. Hasil: Uji statistik menunjukkan terdapat perbedaan bermakna pada perbandingan viabilitas sel biofilm in vitro bakteri usap lidah individu Non-Baduy yang diintervensi oleh spent medium isolat bakteri usap lidah individu Baduy berdasarkan konsentrasi protein dan nitrat sebesar 5% dan 10%, massa biofilm in vitro bakteri usap lidah individu Non-Baduy yang diintervensi spent medium dengan konsentrasi nitrat 5% dan 10%. Tidak terdapat perbedaan bermakna pada massa biofilm in vitro bakteri usap lidah individu Non-Baduy dengan perbedaan konsentrasi protein 5% dan 10%, serta viabilitas sel dan massa biofilm yang diintervensi oleh spent medium isolat bakteri usap lidah individu Baduy yang mengandung KNO3 dan tanpa KNO3. Kesimpulan: Peningkatan konsentrasi protein pada spent medium isolat bakteri usap lidah individu Baduy sebagai bahan uji meningkatkan massa biofilm in vitro bakteri usap lidah individu Non-Baduy. Namun, peningkatan konsentrasi nitrat pada spent medium isolat bakteri usap lidah Baduy dapat menurunkan viabilitas sel pada biofilm in vitro bakteri usap lidah individu Non-Baduy. Selain itu, kandungan KNO3 pada spent medium juga meningkatkan viabilitas sel dan massa biofilm in vitro Non-Baduy. Kata kunci: Suku Baduy, spent medium isolat bakteri usap lidah, konsentrasi protein, konsentrasi nitrat, viabilitas sel, dan massa biofilm.

.....Background: Baduy is a tribe that still preserves its own culture without being influenced by external factors that cause genetic variations and can influence the composition of microbes in the oral cavity. Microbial variations and oral hygiene status are related to biofilm growth which is influenced by the

metabolites of several microorganisms, such as proteins and nitrates. Proteins play an important role in microbial attachment and support intracellular adhesion and communication between the microorganisms, thereby increasing biofilm formation. The presence of NO in the oral cavity can reduce the level of c-di-GMP which causes dispersion in the biofilm, so that it can break down the biofilm matrix. Objective: To determine the effect of spent medium of bacterial isolates of tongue swab from the Baduy on cell viability and biofilm mass of the Non-Baduy's tongue swab bacterial under aerobic conditions. Methods: Protein concentration of spent medium of bacterial isolates from tongue swabs of the Baduy was examined using the Bradford test, the Griess test to determine nitrate concentration, the Crystal Violet test to determine the optical density value which represents the biofilm mass of the Non-Baduy's tongue swab bacterial, and the Total Plate Count (TPC) test which determines cell viability of in vitro biofilm of the Non-Baduy's tongue swab bacterial. Each treatment was differentiated based on the concentration of protein and nitrate at 5% and 10% of spent medium of bacterial isolates of tongue swab from the Baduy with an incubation time of 24 hours under aerobic conditions. Afterwards, the data was collected and tested statistically using One-Way ANOVA, Independent T-test, and Mann-Whitney U test. Results: There were statistically significant differences in the comparison of cell viability of Non-Baduy tongue biofilms that were intervened by spent medium based on protein concentrations of 5% and 10% and nitrates of 5% and 10%, the mass of in vitro biofilm of the Non-Baduy's tongue swab bacterial that were intervened by spent medium of bacterial isolates of tongue swab from the Baduy based on nitrate concentrations of 5% and 10%. There were no statistically significant differences in comparison of the mass of in vitro biofilm of the Non-Baduy's tongue swab bacterial with 5% and 10% protein concentration of spent medium of bacterial isolates from tongue swabs of the Baduy, as well as cell viability and biofilm mass that were intervened by spent medium of containing KNO3 and without KNO3. Conclusion: Increasing the protein concentration in spent medium of bacterial isolate of tongue swabs from the Baduy as a test material increases the mass of in vitro biofilm of bacterial tongue swabs from the Non-Baduy. However, increasing the nitrate concentration in spent medium of bacterial isolate of tongue swab from the Baduy can reduce cell viability in the in vitro biofilm of bacterial tongue swabs from the Non-Baduy. In addition, the KNO3 content in the spent medium of bacterial isolate of tongue swab from the Baduy also increased the cell viability and tongue biofilm mass of in vitro biofilm of bacterial tongue swabs from the Non-Baduy. Key words: Baduy, spent medium of bacterial isolate of tongue swab, protein concentration, nitrate concentration, cell viability, and biofilm mass.