EFFECT OF CHALCOGENOLESTERS ON PLANKTONIC CELLS AND BIOFILMS FROM ORAL BACTERIA

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Bacteria have a natural tendency to develop cell communities surrounded by a self-produced polysaccharide matrix called a biofilm. Biofilms formed on tooth surfaces (dental plaque) are the main etiologic factor for the majority of dental disorders such as caries, gingivitis and periodontitis. Dental plaque consists of multiple species of bacteria that take part in the complex ecosystems of the oral cavity. *Streptococcus* genus is commonly found in the human oral cavity, among these *S. mutans* and *S. parasanguinis*. In this context, the search for new compounds capable of preventing or eradicate oral biofilms it has been intensified. This study aimed to evaluate the antibacterial and antibiofilm activities of five chalcogenolesters synthetics (S501, S502, S503, S505, S506) on *S. mutans* ATCC 25175 and *S. parasanguinis* ATCC 903. The effect of chalcogenolesters on planktonic cultures was determined by minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Regarding biofilm formation, the compounds were added to bacteria (1×10^6 CFU/mL in Brain Heart Infusion broth supplemented with 1% sucrose) in different concentrations (250 to 7.80 µg/mL) in microtiter plates. The plates were incubated for 24 h at 37ºC in an orbital shaker at 120 rpm under atmospheric pressure with 5% CO_2. Subsequently, biofilms formation was characterized by total biomass, through crystal violet staining, and number of viable cells, expressed as log CFU/mL. The results showed that the chalcogenolesters S505 and S506 showed MIC of 125 and 62.50 µg/mL to *S. mutans* and S501, S502 and S506 MIC of 62.50, 31.25 250 µg/mL to *S. parasanguinis*. Interestingly, the chalcogenolesters not showed MBC. Regarding biofilm formation, in general, all compounds reduced efficiently the biomass formation and number of viable cells, mainly of *S. parasanguinis*. Furthermore, the most promising compound showed differences in their activities, which can be explained by minor differences in their chemical structure. It is concluded that the chalcogenolesters tested have potential to be an effective alternative to be used against oral biofilms involving *S. mutans* and *S. parasanguinis*.

Keywords: Chalcogenolesters; oral biofilms; *Streptococcus*

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