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The Impact of Photodynamic Therapy on the Viability of *Streptococcus mutans* in a Planktonic Culture

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ABSTRACT

Objective: **This study investigated the effect of photodynamic therapy (PDT) with toluidine blue O (TBO) and a light-emitting diode (LED) on the viability of *Streptococcus mutans* cells in a planktonic culture.** ***Background Data:*** **Growth of *Streptococcus mutans* is the first step in the development of tooth decay. The use of light and dyes promotes cellular death in a noninvasive way, reducing treatment time.** ***Methods:*** **The LED used in this study had output power of 116 mW, its energy was 21 J, and the fluency was 2.18 J/cm^2. Samples were prepared and divided into five groups: (1) control group (−); (2) control group (+); (3) TBO; (4) LED; and (5) LED + TBO.** ***Results:*** **One hundred percent of the bacteria were killed following irradiation with LED and TBO. The biofilm that formed on the glass surfaces was analyzed by SEM and colony count.** ***Conclusions:*** **It was demonstrated that PDT was efficient at killing microorganisms and preventing the formation of biofilms.**