Killing of cariogenic bacteria by light from a gallium aluminium arsenide diode laser

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ABSTRACT

Suspensions of *Streptococcus mutans*, *S. sobrinus*, *Lactobacillus casei* and *Actinomyces viscosus* were exposed to light from a gallium aluminium arsenide laser in the presence of aluminium disulphonated phthalocyanine and the numbers of survivors determined. Exposure to the laser light in the absence of the dye, or the dye in the absence of the laser light, had no significant effect on the viability of the organisms. However, a light-dose-related decrease in the viable count of all four target organisms was found on exposure to the laser light in the presence of the dye. The kills attributable to lethal photosensitization amounted to approximately 10^9 CFU in the case of each organism. As appreciable kills were achieved within clinically convenient exposure times (30–90 s), these results imply that lethal photosensitization may be a useful technique for eliminating bacteria from carious lesions prior to restoration.

KEY WORDS: Photosensitization, Aluminium disulphonated phthalocyanine, Bacteria, Caries, Laser

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