

Toluidine blue-mediated photoinactivation of periodontal pathogens from supragingival plaques

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Abstract This study aimed to assess the effect of toluidine blue (TB)-mediated photodynamic inactivation of periodontal pathogens (PP) from periodontopathic patients. Photodynamic therapy (PDT) was carried out using TB and 635 nm laser light irradiation. The bactericidal effect was evaluated, and important PDT parameters including light intensity, energy dose, and TB concentration were determined. Our findings suggest that TB-mediated lethal photosensitization of PP in vivo is possible. However, to obtain ideal bactericidal effect, higher doses of light and photosensitizer should be required in treatment in vivo than their planktonic counterparts. The best therapeutic effect was observed in treatment by 1 mg/ml TB combined with 12 J/cm² at 159 mW/cm² light irradiation. Moreover, because of the considerable interindividual differences of bacterial populations, TB-mediated PDT might not be equally effective among periodontopathic patients, and further studies on improvement of this therapeutic modality is needed.