

Antibiofilm and Antioxidant Activity of Formulated Nanoemulsion from *Ocimum tenuiflorum* †

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Abstract: Nanoemulsions are nano-sized emulsions, which are made for improving the delivery of active pharmaceutical ingredients. These are the thermodynamically steady isotropic system where two immiscible liquids are mixed to form a single-phase by means of an emulsifying agent, i.e., surfactant and co-surfactant. In this study, the extracts of essential oils from medicinal plants, namely, *Ocimum tenuiflorum* (Tulasi) is used, which have antimicrobial, antioxidant, antibiofilm, and anti-inflammatory activities. Oil in water emulsions was prepared by high-pressure homogenizer using plant essential oils with water as a dispersion medium. The physical and mechanical stability tests were carried out. The emulsions were subjected to antibiofilm assays, and results were compared to estimate the anti-biofilm efficacy of the emulsions. The emulsions were prepared by varying concentrations and time to determine the particle size distribution. These results proposed for developed plant essential oil-based nanoemulsion is thermodynamically stable, and formulated nanoemulsion will be used in various biomedical applications, textile industry applications, and food industry.

Keywords: Nanoemulsion; Homogenizer; Surfactant; Antibiofilm activity; Oil in water emulsion.

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Conflicts of Interest

The authors declare no conflict of interest.