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Evaluation of Effect of High Frequency Electromagnetic Field on Growth and Antibiotic Sensitivity of Bacteria

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Abstract

This study was aimed to evaluate the impact of high frequency electromagnetic fields (HF-EMF at 900 and 1800 MHz) on DNA, growth rate and antibiotic susceptibility of *S. aureus*, *S. epidermidis*, and *P. aeruginosa*. In this study, bacteria were exposed to 900 and 1800 MHz for 2 hours and then inoculated to new medium when their growth rate and antibiotic susceptibility were evaluated. Results for the study of bacterial DNA unsuccessful to appearance any difference exposed and non-exposed *S. aureus* and *S. epidermidis*. Exposure of *S. epidermidis* and *S. aureus* to electromagnetic fields mostly produced no statistically significant decrease in bacterial growth, except for *S. aureus* when exposure to 900 MHz at 12 hours. Exposure of *P. aeruginosa* to electromagnetic fields at 900 MHz however, lead to a significant reduction in growth rate, while 1800 MHz had insignificant effect. With the exception of *S. aureus*, treated with amoxicillin (30µg) and exposed to electromagnetic fields, radiation treatment had no significant effect on bacterial sensitivity to antibiotics.

KEYWORDS: Electromagnetic fields, Bacterial DNA, Antibiotic sensitivity and Bacterial growth.

1. Introduction

Electromagnetic fields (EMF) have a major impact on biological systems (Panagopoulos et al., 2002; Balcavage et al., 1996; Grassi et al., 2004) including human health (Feychting and Ahlbom, 1993; Berg, 1999; Valberg et al., 1997). Recently, microorganisms are being

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