



Research article

ZnONPs synthesis, characterization and activity against bacterial species isolated from chronic dentoalveolar abscess

Amr A. El-Waseif^{*1}, Samir M. Halawa², Mohamed O. Abdel Monem³, Saif S. Al-Janabi³, Mahmoud M. Amer³

¹Botany and Microbiology Department, Faculty of Science (Boys), Al-Azhar University, Cairo, Egypt.

²Oral and Maxillofacial Surgery in Banha, University Hospitals, Egypt.

³Botany and Microbiology Department, Faculty of Science, Banha University, Egypt.

Key words: Dental Infection, *Staphylococcus*, Antibiotics, Zinc oxide nanoparticles, MIC.

***Corresponding Author: Amr A. El-Waseif**, Botany and Microbiology Department, Faculty of Science (Boys), Al-Azhar University, Cairo, Egypt.

Vol. 6(1), 18-24, Jan-Mar, 2019.

Abstract

Bacteria Causes Chronic Dentoalveolar Abscess usually treated using commercial antibiotics. Our research targeted the isolation of bacteria from 100 Chronic Dentoalveolar Abscess patients. Results of isolation part showed that 72 specimens recorded positive bacterial growth. Identification of bacterial isolates was performed using Grams stain and biochemical automated identification systems (VITEK). *Staphylococcus aureus*, *Kocuria rosea*, *Enterococcus casseliflavus*, and *Pseudomonas aeruginosa* were found in specimens taken from chronic dentoalveolar abscess in our patients. Molecular analysis 16S RNA used as confirmation test with the most potent pathogen and widely distribution 11M23 that act 92 % of total clinical isolates. Sequence data obtained that the sequence of 11M23 showed highest similarity (100%) to *Staphylococcus aureus*. Results of antibiotic sensitivity showed the multi-drug resistance bacterial species *Staphylococcus aureus* 11M23 obtained resist to Cefroxime, Oxacillin, Rifampin, Cefadroxil, and Amoxicillin. Synthesis of ZnONPs by chemical method performed and the resulted nanoparticles are characterized using TEM, UV-vis spectroscopy and Zeta potential. The antibacterial activity and minimum inhibitory concentration was carried out. ZnONPs can inhibit the growth of the *Staphylococcus aureus* in the obtained specimens at the minimum inhibitory concentration 3.4 mM.