



Evaluation of Anti Bacterial Activity: Anti adherence, Anti Biofilm and Anti Swarming of the Aquatic Extract of Black Raisins and Vinegar of Black Raisins in Hilla City, Iraq

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Abstract:Background: Raisins are dried grapes, prepared from some varieties of grapes (*Vitisvinifera*). The history of raisin consumption is very old.

Objective: An evaluation of Antibacterial activity of the extracts of black raisins and black raisin vinegar against bacteria *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus pneumoniae*, *Streptococcus feacalis*, *Streptococcus mutanus*, *Streptococcus feacalis*, *Escherichia coli*, *Salmonella typhi*, *Moraxalliacatarralis*, *Pseudomonas aeroginosa*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Enterobacter spp.* *Acinetobacter*, *Serratiasppand* *Candida albicans*.

Methods: Two black raisins products were used to determine the antibacterial activity of black raisins; crude aquatic extracts of dried black raisins, and the vinegar of dried black raisins. Agar well diffusion method, biofilm inhibition test using tissue culture plate method, adherence and swarming inhibition assays were done for estimation and evaluation of the antibacterial activity of black raisins.

Results: Result showed that both the crude extract of black raisins and the vinegar of black raisins have potential antibacterial activity. The results were determined by measuring the inhibition zone, the inhibition of bacterial motility using swarming assay with all gradual different concentrations of black raisins and the vinegar of black raisins (Pearson correlation =0.9; P value ≤ 0.05 , the inhibition of bacterial cell adherence to oral epithelial cells, quorum sensing and biofilm formation.

Conclusions: Black Raisins and vinegar of black raisins exhibit marked antimicrobial activity bacteria and fungicidal activity. They can inhibit motility, inhibit biofilm formation and inhibit bacterial cell adherence to oral epithelial cells. Based on the results it can be concluded that they can inhibit bacterial colonization and adherence to teeth and oral cavity, and provide production against different human pathogens and this may have clinical relevance.

Keywords: Black Raisins, biofilm, bacterial adherence, swarming.