

Effect of Gamma Irradiation on Biofilm Formation of Some Gram- Negative Bacteria Isolated From Burn and Wound Infections

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Abstract : Objectives: To detect the effect of gamma irradiation on Biofilm Formation of Some Gram- Negative Bacteria Isolated From Burn and Wound Infections.

Methods: A total of Fifty isolates included Twenty-three of *Pseudomonas aeruginosa*, Seventeen of *Klebsiella pneumonia* and Ten of *Acinetobacter baumannii* were isolated from burns and wound infections. The susceptibility to different antibiotics was evaluated by disk diffusion method and the effect of gamma irradiation on the growth and their ability to produce biofilm were studied.

Results: All isolates were multi-drug resistant, and the resistance was 100% to tetracycline while all isolates were sensitive to colistin.

The results of irradiation bacterial isolates showed that Cesium (^{137}Cs 5 μCi) and Sodium (^{22}Na) were effected against *P. aeruginosa* isolate, which reduces the CFUs (95.38%) and (95.07%) respectively. Sodium (^{22}Na) was effective source against *A.baumannii* which reduced the growth (75.75%). On the other hand, results in the current study showed a reduction in the growth of *K. pneumoniae* isolate after irradiation with ^{60}Co and ^{137}Cs 5 μCi . The percentage of biofilm inhibition of *P.aeruginosa* was increased up to (53.7%) after exposed to ^{137}Cs and ^{22}Na and increased to (54%) after exposed *A.baumannii* cells to ^{137}Cs . The results of the effect of gamma irradiation on biofilm of *P.aeruginosa* relation to different surfaces (plastic, glass, cotton, stainless steel, gauze and gloves) illustrated that the best antibiofilm effect obtained in stainless steel and plastic with inhibition rate (70.01%) and (50.24%) respectively after exposure to ^{137}Cs .

Conclusion: we report here the gamma irradiation was effectiveness against growth and biofilm formation of Some Gram- Negative bacteria isolated from burn and wound Infections.

Keywords: *Acinetobacter baumannii*, *Klebsiella pneumoniae*, Cobalt 60, Cesium 137, biofilm.