

**Ministry of Higher Education  
& Scientific Research  
Al- Muthanna University  
College of Science**



*Isolation and Irradiation of Pathogenic Bacteria from  
aborts women in Samawah city  
using Low Level Laser*

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## *Abstract*

This study aims at detecting the immune responses against multiple bacterial vaccines which prepared from bacterial isolates of abortion cases from ladies presented to the Gynecology and Pediatric Hospital in Samawah City. This aim was derived in three directions; the first one is to demonstrate the bacterial causes of abortion in the ladies and determining the age groups which were more susceptible for the infection. The second direction illustrate the mechanisms of killing and attenuating of bacteria using low level energy laser in order to produce multiple vaccines. While the third direction showed the mechanism of vaccination and determination of immunoglobulin concentration.

103 samples collected from ladies suffered from abortion, the specimens included: (blood, placenta, vaginal swab), and identified using morph-ological characteristics, cultural, biochemical characteristics, microscopic examination using Gram stain, Hemolysin Detection, cAMP test in addition to the serological test, antibiotics sensitivity test and Identification using API system .

56 bacterial isolates obtained representing a rate of 54.3 % from the total number of the 103 samples, the first period of pregnancy gives higher rate of abortion cases at a rate of % 46.5 while the last period of pregnancy showed the lowest rate, 15% , the second period gives % 38.3. The results showed that the positive bacterial isolation was 54.3 %. *S.agalactiae* (hemolytic or non hemolytic) came the first at a rate of 33.9 %, and 23.2 % for *Staph. aureus* which came the second in the rank, while *Salmonella*, 8.94 %, *E.coli* 7.14 %, *Klebsiella* 5.3 % and *P.aeruginosa* 3.62 %. Other isolates was 7.14 % for *Brucella* and *Listeria* at a rate of 3.62 % in addition to *E. cloacae* at a rate of 7.14 % from the total number of isolates.

The current study demonstrates that the age group (21-25) year gave higher rate of abortion 32.03 %, while the age group of (41-45) year gave the lower rate of abortion, 3.88 %.

The antimicrobial agent's sensitivity before irradiation done for twelve antibiotics, the bacterial isolates showed high resistance for these antibiotics except Amikacin.

Some features were studied after irradiating with diode laser using wavelength 660 nm, out put (50 and 250) mw ,frequency (1-10) kHz, the results revealed that diode laser had clear effects on the bacterial sensitivity to antimicrobial agents which

increased reaching to kill the bacteria. In addition, bacterial count decreased and lost of blood hemolysis and production of biocyanine stain from *P.aeruginosa* according to increasing in time of exposure to irradiation reaching to the killing and attenuating the bacteria to prepare vaccines.

To determine the level of the immune response after inoculation of the vaccine, twenty four adult white New Zealand male rabbits with 1.5 -2 Kg body weight each, they were divided into six groups with 4 rabbits for each, inoculated with killed and attenuated vaccine. 35day later (the immunization period) blood samples collected from all the experimental animals, to determine some systemic immune response parameters (humeral) to compare the immunized animals with the control ones, which were injected with normal saline.

The humeral immune response was also studied using Radial Immunodiffusion test RID (to determine the immunoglobulin's concentration for the IgM, IgG, and IgA). Immunoglobulin concentration rates were higher ( $P > 0.05$ ) in the test subgroup animals compared with those of the control one, also the live attenuated vaccine induced highly immune response as compared with killed vaccine. And the first vaccine (A) considered more efficient compared with the second vaccine (B). The challenge dose given to all animals, the control subgroup animals died while the immunized animals did not response.

We conclude that the bacterial isolates were effected with exposure it to irradiation of laser with 660nm at 50-250mw using different times.