

Phenotypic Detection of Adhesive Activity and Biofilm Formation among *Prevotella* spp. Isolated from Patients Suffering from Acute Inflammation in Root Canal Teeth.

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- **Abstract:** In this study, 150 patients were visited to dental clinic in Al - Hilla city suffering from acute inflammation in root canal teeth, the samples were cultivated anaerobically culture at (37°C) for (48) hrs. Identification of *Prevotella* spp. was depended on the colonial morphology, microscopically, and biochemical tests as initial identification, after that, these isolates were identified by specific negative cards of Vitek 2 system, out of 150 specimens only 17(11.4%) isolates were belonged to *Prevotella*, while 133(88.6%) related to other types of microorganisms. Identification of *Prevotella* spp. by Vitek 2 system were classify these bacteria in to three species, the results showed that, out of 17 *Prevotella* isolate, 12(70.6%) were related to *Prevotella intermedia*, 3(17.7%) isolates were related to *Prevotella nigrescens* and 2(11.7%) isolates were related to *Prevotella tanneriae*. In order to identify which *Prevotella* bacteria are present in the subject, the researchers extracted DNA from the numerous *Prevotella* strains that had previously been identified with the Vitek2 system. They then used the extracted DNA to conduct PCR with specific primers for the 16S RNA gene to amplify it. Gel electrophoresis revealed that all of the *Prevotella intermedia* samples (100%) generated a 660 bp DNA fragment, which was unique to the strain. Isolates that previously tested positive for *Prevotella nigrescens* using the Vitek2 method were identified with molecular testing for 16srRNA gene. The findings revealed that every one of the 3 test subjects (100%) was positive. Bands showing a higher yield as compared to the genomic sequence appear while looking for more than 800 bp of sequence. As well, 16srRNA gene detection was performed on 5 *Prevotella tanneriae* isolates, and it was determined that the 2 (100%) isolates tested positive for this gene. The findings showed an increase in (1110 bp) band size compared to the normal allelic ladder. Epithelial cell adhesion is thought to be a vital component in bacterial infection. All the examined species of *Prevotella* (100% of the group) were positive for the findings. Additional studies to measure quantitatively the quantity of biofilm production were done in a microtiter with Trypticase Soy Broth plus (1 percent) glucose. To improve the accuracy of this test, it was performed three times. The study's findings were translated into three categories of biofilm formers: non-

biopersistent, moderate, and chronic bacteria biofilm formers based on the level of OD value, which can be read as ($OD < 0.120$, $OD = 0.120-0.240$, and $OD > 0.240$). The findings concluded that all *Prevotella* isolates produced biofilms (100 percent) and *Prevotella intermedia* biofilms were present in a majority of specimens (10 percent), the majority of *Prevotella nigrescens* also displayed biofilms (3 out of 3, 100 percent), and the minority of *Prevotella tanneriae* expressed moderate biofilms (1 out of 2, 50 percent) while only the minority of *Prevotella intermedia* specimens showed any trace of biofilm (2 out of 12, percent) (50 percent). To test for in vitro antibiotic resistance in root tooth-related acute inflammation, *Prevotella* spp. isolates from all *Prevotella* isolates were put through the modified Kirby-Bauer disc diffusion technique. Clindamycin, Amoxicillin, Ceftazidime, Tetracycline, Chloramphenicol, Aztreonam, and metronidazole are all antibiotics that have been shown to be effective against *Prevotella* spp. isolates. The results compare according to Clinical Laboratory Standard Institute guidelines (CLSI, 2019) as resistant. Highest rate of resistant is seen to almost antibiotics used in present study, 16(94.1%) isolates were resistant to Clindamycin, 15(88.2%) isolates were resistant to Amoxicillin, 13(76.47%) isolates were resistant to Chloramphenicol, 11(64.7%) isolates were resistant to Tetracycline, 9(52.9%) isolates were resistant to Aztreonam and 3(17.6%) isolates were resistant to metronidazole.

- **Keywords:** Dental clinic, morphology, microscopically, and biochemical tests, species of *Prevotella*, Clinical Laboratory Standard Institute guidelines