Summary:

A total of 100 oral swabs were collected from patients suffering from dental caries and priodontal infections, ranging from 15-65 years old of both genders whom admitted to the Al-Diwaniyah Teaching Special Center of Dentistry within the period from December 2012 to March 2013, in order to quantify the gene expression of biofim regulatory protein (*Brp A*) in *Streptococcus mutans* isolates by using the Real Time polymerase chain reaction.

According to morphological, cultural characteristics and biochemical tests by using VITEK- 2 system, 34/84(40.47%) isolates of *S.mutans* were isolated and identified among *streptococcus* species and the isolation percentages were 26/50(52%) in males and in females were 24/50(48%), while the age group (15-25 years old) was the most affected than the other groups. The statistical analysis showed no significant differences among the interaction between gender and age groups.

Molecular detection of *16s rRNA* gene was amplified to confirm the diagnosis of *S.mutans* isolates, where all isolates gave an amplicon size (151) bp, in addition to, the DNA sequencing was done in order to identify the nitrogen bases sequences and phylogeny of local isolates in comparison with the global isolates (Spain, Japan, Korea, USA, Canada, India), results revealed that the local isolates of *S.mutans* had a similarity percent (90%) with Spain isolates.

Furthermore, the susceptibility of isolates to a variety of antibiotics have been investigated. It has been found that isolates had multiresistance to erythromycin(88.2%),ampicillin(76.4%),amoxiclave(70.5%),tetracycline(61.7%), nalidixic acid and amoxicillin (58.8%), chloramphenicol (55.8%). The statistical analysis showed a significant differences among tested antibiotics.

Biofilm formation was investigated phenotypically by using tissue culture plate with crystal violet staining for resistant *S.mutans* isolates, the results revealed that all isolates were high biofilm former, furthermore, the effect of ethanolic extraction (50%) of curcumine in growth inhibition and biofilm

reduction of *S. mutans* was assayed. The results showed an effect of curcumine in comparison with chlorhexidine(2%) as a control.

The gene expression of biofilm regulatory protein A(*Brp A*) was quantified in comparison with housekeeping gene *16s rRNA* as a reference gene of biofilm *S.mutans* by using reverse transcriptase polymerase chain reaction (RT-PCR). The results revealed that the expression (relative&absolute) of *Brp A* gene is decreased in the test treatment (*S.mutans* with 1% glucose+ 50% curcumine) in comparison with control (*S.mutans* grown in 1% glucose only).

In conclusion, the present study established the role of *Brp A* gene in biofilm formation.