

# Evaluation of The Relationship Between Polymorphisms of MMP20 (Matrix Metalloproteinase-20), KLK4 (Kallikrein-4) Genes Which are Critical in Enamel Formation and Dental Caries on Children of Age of 3-5 Years

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**Objective:** Dental caries is a transmissible infectious disease that still represents a significant public health problem in many countries. Genetic factors play a role in the formation of dental caries. As the outcomes of Human Genome Project are started to be applied in the oral medicine, many researchers studied genes and their protein products that may contribute to tooth decay. The aim of this study was to evaluate the relationship between MMP20 (Matrix Metalloproteinase-20), KLK4 (Kallikrein-4) gene polymorphisms and dental caries on children.

**Methods:** In a total of 259 children at the ages of between 3-5 years, 136 children with tooth decays / dental caries were included in the study group and 123 without tooth decays were included in the control group. Buccal swabs were collected from each individual and DNA was extracted. RT-PCR method was used.

**Results:** The outcomes suggest that rs1784418 single nucleotide polymorphism of MMP20 genes and rs2235091, rs198968 single nucleotide polymorphisms of KLK4 genes are not statistically associated with dental caries ( $p>0.05$ ). The results of the univariate analyses indicate that rs1784418 polymorphism in the promoter region of MMP20 gene, rs2235091 and rs198968 polymorphisms in the promoter region of KLK4 gene do not have an influence on the transcriptional factors and are not associated with dental caries. However, the genotypes AG and GG in the rs198986 in KLK4 were associated with protection as observed in the multivariate analysis.

**Conclusion:** Environmental factors and genetic factors are affective, these two factors increase the risk of dental caries.

**Key words:** Polymorphism, gene, MMP20, KLK4, dental caries