

31<sup>st</sup> International Conference on

# DENTAL SCIENCE & ADVANCED DENTISTRY

June 25-26, 2018 | Vancouver, Canada

## Protective role of urokinase plasminogen activator against oxidative damage in periodontal ligament tissue

**Hodjat Mahshid**

Tehran University of Medical Science, Iran

Oxidative stress has been implicated in the initiation and development of many oral diseases. Urokinase plasminogen activator (uPA) is a serine protease widely expressed in different tissue and plays important role in extracellular matrix degradation involved in many pathologic and physiologic events. High concentration of uPA in gingival cervical fluid indicated the essential role of this enzyme in the periodontal tissue homeostasis. The aim of this study is to investigate the effect of urokinase on oxidative-induced DNA damage in periodontal ligament fibroblast. Periodontal ligament cells were isolated from human wisdom teeth of healthy donors. Using oxidative stress model, the isolated cells were incubated with uPA and amiloride, the inhibitor of uPA, after peroxide treatment. Cells viability and apoptosis were assessed and the expression of  $\gamma$ H2AX was studied as a sensitive tool for estimating DNA damage level. DNA damage breaks were examined by alkaline comet assay. Our results showed that the incubation of the peroxide-treated cells with uPA significantly increased cell viability and decreased cell apoptosis. UPA inhibition in amiloride treated cells, in turn, reduced cell viability. Moreover, a significant decreased in  $\gamma$ H2AX expression and level of DNA breaks were demonstrated after peroxide treatment in uPA-treated cells, while amiloride treated cells were more sensitive to DNA damage. The present study brings support to the theory that urokinase plasminogen activator may have a protective role for the periodontal tissue. Therefore, decreased in uPA expression in the oral cavity, might be a marker for the subsequent development of the oral disease.

mhodjat@Sina.tums.ac.ir