

**1631 Gene Expression Induced by Pulp Inflammation Leading to Root Resorption
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Although it is known that pulp inflammation results in a loss of tissue components within the pulp increasing the risk of root canal resorption, the molecular events leading to the resorption are not known. Objective: In this study we present initial efforts towards analyzing the molecular determinants of root resorption due to pulp inflammation using a rat model. Methods: Pulp inflammation was induced in rats by making an endodontic access to the pulp chamber of the rat first maxillary molar with a long round bur #0.009. The disto-palatal canal was followed with a 0.06 stainless steel file of 21 mm. The root canal was left open for different periods of time up to two weeks. The animals were sacrificed after 0, 3, 5 and 7 days of the treatment and samples were divided into two groups. One group was used for histological analysis and the other for preparation of RNA for microarray analysis. All animal procedures were approved by the USC Animal Ethics Review Board. Results: Our results indicate that root resorption was seen as early as 7 days after the treatment. The array analysis indicates that there is an induction of the expression of more than 160 genes ranging from transcription factors, cytokines (interleukins 1beta, 12b, 18 and TNF alpha) extracellular matrix proteins and metalloproteases as a consequence of the treatment. Conclusions: The rat model for pulpitis induced root resorption together with state of the art microarray technology provide us with the means to analyze the initial molecular events of pulpitis leading to root resorption. This study was supported by a grant from the American Association of Endodontists Foundation.

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