AAO Foundation Award Final Report

Principal Investigator	Judith Lampasso DDS PhD
Co-Investigator	Rosemary Dziak PhD
Secondary Investigators	
Award Type	Biomedical Research Award
Project Title	The Role of PKC Eta & Theta in Osteoblastic Cell Differentiation
Project Year	2006
Institution	State University at Buffalo School of Dental Medicine
Summary/Abstract (250 word maximum)	In order to understand the intracellular pathways involved in the actions of PKC eta in cellular differentiation, we investigated the effects of a specific PKC eta inhibitor on human periodontal ligament fibroblasts (HPLF). Human periodontal ligament fibroblasts were grown in culture plates in the presence of Emdogain. PKC-eta inhibitor, NPC 15437 at two different concentrations of 10^{-6} and 10^{-8} M, or the general PKC inhibitor, Staurosporine (40nM), was added to the culture plates after 24 hours. Time points of 24, 48 and 72 hours of inhibitor incubation were investigated along with controls. Cellular proliferation was assessed using tritiated thymidine uptake while MTT assay was used to assess cellular viability. Alkaline phosphatase activity determined cellular differentiation. The data from the groups were statistically analyzed by ANOVA including post hoc analysis. Results demonstrated a decrease in cellular proliferation in EMD stimulated fibroblasts in presence of Staurosporine while the specific PKC eta inhibitor had no effect. The PKC–eta inhibitor decreased the alkaline phosphatase levels at the 48 hour time period while the general inhibitor had a greater effect on the untreated HPLFs and 5µg/ml EMD at 72-hour incubation. The present study has demonstrated a possible role for PKC in the mechanistic action of EMD in HPLF cells. Results suggest PKC eta may in part play have a role in EMD induced HPLF cellular differentiation however, further studies are needed to understand the direct effects of the enamel matrix derivative and PKC isoform expressions in periodontal fibroblast cell proliferation and differentiation.
Were the original, specific aims of the proposal realized?	To a limited extent
Were the results published? If not, are there plans to publish? If not, why not?	A concerted effort of the study outlined above and previous studies resulted in a manuscript which was submitted to the Journal of Dental Research: JD Lampasso, A. Alsilmi, H. Perinpanayagam, Y. Park and R. Dziak. Enamel Matrix Derivative Modulates Protein Kinase C Isoforms in Osteoblasts. Additional studies were requested for clarification before the manuscript would be accepted for publication.
Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?	The results of the above study were presented at the University at Buffalo annual Student Research Day as a poster presentation.