

AAO Foundation Award Final Report

Principal Investigator	Sunil Kapila, BDS., MS., PhD.
Co-Investigator	Charles McNeill, DDS.
Secondary Investigators	Elana Peikoff, DDS., MS.
Award Type	Biomedical Research Grant
Project Title	The Role of the Hormone Relaxin in Temporomandibular Joint Disease in Women
Project Year	1995
Institution	University of California San Francisco
Summary/Abstract	<p>These studies tested the hypothesis that the systemic and local levels of relaxin correlate with the severity of joint disease in women, and that relaxin mediates joint pathology by modulating the expression of matrix metalloproteinases (MMPs) and their inhibitors.</p> <p>For our in vitro studies we determined the effects of relaxin on the expression of MMPs and their inhibitors (TIMPs) in unprimed and β-estradiol-primed TMJ disc fibrocartilaginous cells. These studies were published in the premier pathology journal <i>Laboratory Investigation</i> (Kapila and Xie, 1998; 78:925-938) and the AAOF funding was acknowledged in the manuscript. We demonstrated that relaxin dose-dependently induces the MMPs collagenase-1 and stromelysin-1 with minimal modulation of tissue inhibitors of metalloproteinases (TIMP)-1 and -2 expression. Priming of these cells with β-estradiol potentiated their MMP-inductive response to relaxin such that the maximal expression of collagenase-1 and stromelysin-1 occurred at 10- to 100- fold lower concentration of relaxin in primed than in unprimed cells. β-estradiol alone did not alter the expression of these proteinases.</p> <p>For our studies on the systemic levels of hormones in women with and without TMJ disorders, our preliminary findings supported by the AAOF showed higher levels of systemic relaxin in symptomatic than in asymptomatic women. On the basis of these and other findings, we successfully applied for NIH funding. This funding enabled us to recruit over 200 women for the study. Data analysis on this sample is ongoing and findings will be published in the near future.</p>