

Presence of Collagen X in the Dentine of the Developing Tooth

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In physiological conditions, collagen X is mainly found at the hypertrophic cartilage. Hypertrophic chondrocytes transiently produce collagen X as their major extracellular product. This is shortly followed by the mineralization of the cartilage matrix. Dentine of the tooth is a highly mineralized tissue. Collagen I dominates the dentin matrix. Non-Collagenous proteins (NCPs) represent about 10% of the organic components. There are no previous records of presence of Collagen X in the dentine. We have investigated into the developing tooth of the 18-day old mouse embryo ($n=16$). Immunohistochemistry was conducted using rabbit polyclonal Collagen X antibody to see if there is any presence of Collagen X. Von Kossa method was used to detect the biomineralization. We found immuno-histochemical evidence of Collagen X in the dentine. Bio-mineralization was observed on the locations where the Collagen X was present. Collagen X may be having a negative effect on mineralization and it acts as a barrier to hold up the progressing mineralization front. Animal care and experiments performed were in accordance with the protocols approved by the Committee on the Use of Live Animals in Teaching and Research of the University of Hong Kong.

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