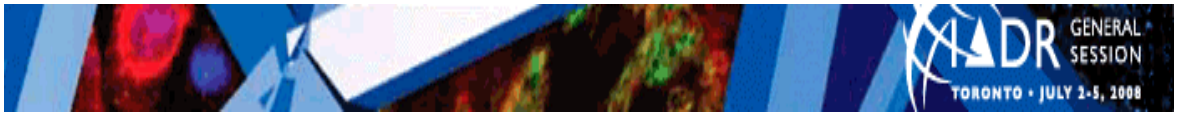
IADR 2008, General Session, Toronto July 2-5, 2008



Seq #205 **Friday, July 4, 2008**

2:00 PM-3:15 PM Metro Toronto Convention Centre Exhibit Hall D-E, Poster

Hard Tissue Physical Properties

2073 EDX assessment of metalloproteinases influence on artificial root lesions

A.R. HANNAS[1], J.C. PEREIRA[1], M. KEMELL[2], and L. TJADERHANE[2], [1]Bauru School of Dentistry, Brazil, [2]University of Helsinki, Finland

2074 Preparation of Thin Undecalcified Frozen Sections from Hard Tissue

T. KAWAMOTO, R. SAKAMOTO, and T. SHIMADA, Tsurumi University, Yokohama, Japan, (Seeing the Poster)

2075 In vitro dietary stain build-up on smooth and roughened teeth

F. LIPPERT, GlaxoSmithKline, Weybridge, United Kingdom, and G.R. BURNETT, GlaxoSmithKline Consumer Healthcare, Weybridge, United Kingdom

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Preparation of Thin Undecalcified Frozen Sections from Hard Tissue

T. KAWAMOTO, R. SAKAMOTO, and T. SHIMADA, Tsurumi University, Yokohama, Japan

Objectives: Thin nonfixed and undecalcified sections from bone and tooth are required for histochemical dental studies because fixation and decalcification during specimen preparation cause protein denaturation and loss of water-soluble materials. The purpose of this study is to prepare undecalcified sections from an extracted adult human tooth, a rat alveolar bone with tooth, and a rat thighbone.

Methods: A 7-month-old rat was given a 0.1% calcein solution intraperitoneally, anesthetized after 3hours, and then the alveolar bone and the thighbone were dissected. The specimens were frozen in pentane cooled with liquid nitrogen and freeze-embedded with an embedding medium (SCEM). Human tooth specimen was embedded using the same procedure. The frozen specimen block was fixed to the cryomicrotome stage and trimmed with a tungsten carbide disposable blade. The block surface was then covered with a pressure sensitive adhesive film (Cryofilm) and cut into 2-6 micron meter thick sections with a cryomicrotome (Leica CM3050S). The sections were histologically or histochemically stained, and then permanently preserved between the adhesive film and a glass slide with photopolymerization resin (SCMM-R2).

Results: This technique yielded 4-micron meter thick complete sections from the adult human tooth as well as the alveolar bone and tooth of a rat. It was possible to make 2-micron meter thick sections. Both soft and hard tissues were well preserved. Cell characteristics (osteoblasts, odontoblasts and fibroblasts) can be observed by using a light microscope at high power. Enzymatic activity and immune-reactivity were stronger than those of chemically fixed specimens. Calcein fluorescence was clearly observed on the bone surface of the 2-micron meter thick sections.

Conclusions: This section preparation method is very useful for preparing undecalcified sections. These sections can be used for the histological study, histochemical study, enzyme histochemistry, and immunohistochemistry. Other applications are possible.

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