

Author:  [ADVANCED](#)

Volume Page

Keyword:    [TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

**Dental Materials Journal**

Vol. 25 (2006) , No. 1 p.113-119

[\[Image PDF \(1037K\)\]](#) [\[References\]](#)**Mineral Concentration of Natural Human Teeth by a Commercial Micro-CT**[Tatiana Nogueira Rocha CLEMENTINO-LUEDEMANN<sup>1\)</sup>](#) and [Karl-Heinz KUNZELMANN<sup>1\)</sup>](#)

1) Poliklinik für Zahnerhaltung und Parodontologie, Ludwig-Maximilians-Universität München

(Received August 5, 2005)

(Accepted December 12, 2005)

**Abstract:**

This study aimed to evaluate a commercial micro-CT system ( $\mu$ CT 20) for quantitative analysis of mineral concentration in human enamel and dentin using different methodologies, and thereby compare the obtained results with established data from published literature. A micro-CT device set at 50 kVp (160 $\mu$ A) was used to scan five whole molars (G1) and five molars ground to 6-mm thickness (G2), as well as evaluate the mineral concentration of the samples. Mean mineral contents for enamel and dentin were 2.57 ( $\pm$ 0.12) and 1.53 ( $\pm$ 0.12) g/ cm<sup>3</sup> for G1, and 2.76 ( $\pm$ 0.03) and 1.45 ( $\pm$ 0.02) g/ cm<sup>3</sup> for G2. Difference between the groups was significant for enamel. For dentin, there was a clear although not significant tendency towards higher values with G1. The equipment could identify and differentiate a higher mineral content of the tooth enamel and dentin from the external to the inner tissue. Further, the absolute mean values of mineral concentration were lower in whole tooth samples than in sectioned samples due to beam hardening. In conclusion, the equipment is well suited for quantifying the mineral content of teeth. However, it is necessary to consider the limited acceleration voltage of the  $\mu$ CT 20 system and to limit sample evaluation to 6-mm thickness.

**Key words:**



[\[Image PDF \(1037K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Tatiana Nogueira Rocha CLEMENTINO-LUEDEMANN and Karl-Heinz KUNZELMANN. Mineral Concentration of Natural Human Teeth by a Commercial Micro-CT . Dent. Mater. J. 2006; 25: 113-119 .

---

doi:10.4012/dmj.25.113

JOI JST.JSTAGE/dmj/25.113

Copyright (c) 2009 The Japanese Society for Dental Materials and Devices

---



---

[Japan Science and Technology Information Aggregator, Electronic](#)

