

Author:  [ADVANCED](#)

Volume Page

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

ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

**Dental Materials Journal**

Vol. 29 (2010) , No. 5 p.512-517

[\[PDF \(2140K\)\]](#) [\[References\]](#)**Morphological and chemical analysis of different precipitates on mineral trioxide aggregate immersed in different fluids**[Linlin HAN](#)<sup>1)</sup>, [Takashi OKIJI](#)<sup>1)</sup> and [Seigo OKAWA](#)<sup>2)</sup>

1) Division of Cariology, Operative Dentistry and Endodontics, Department of Oral Health Science, Niigata University Graduate School of Medical and Dental Sciences

2) Division of Biomaterial Science, Department of Oral Health Science, Niigata University Graduate School of Medical and Dental Sciences

(Received December 18, 2009)

(Accepted April 16, 2010)

**Abstract:**

The purpose of this study was to analyze the ultrastructures and chemical compositions of precipitates formed on mineral trioxide aggregate (MTA; White ProRoot MTA) immersed in distilled water (DW) or phosphate buffered saline (PBS), based on the attribution that MTA's bioactivity and sealing ability are influenced by its interaction with the external fluid environment. After 1 and 14 days of immersion, precipitates formed on MTA disks were analyzed using wavelength-dispersive X-ray spectroscopy electron probe microanalyzer with image observation function (SEM-EPMA; EPMA1601, Shimadzu, Kyoto, Japan), and Fourier transform-infrared (FT-IR) spectroscopy. On DW specimens, cubic-like crystals containing Ca, O, and C (17, 66, and 17 at% respectively) were produced. State analysis of calcium  $k_{\beta}$  spectrum also revealed calcium hydroxide. On PBS specimens, acicular-spherical and lath-like crystals with Ca/P molar ratios of 1.42 and 1.58 respectively were produced. In conclusion, the precipitates formed on DW specimens were identified as calcium carbonate and calcium hydroxide primarily, whereas the precipitates on PBS specimens were inferred to be amorphous calcium phosphate.

**Key words:**[Mineral trioxide aggregate](#), [Surface precipitation](#), [SEM-EPMA](#)

To cite this article:

Linlin HAN, Takashi OKIJI and Seigo OKAWA. Morphological and chemical analysis of different precipitates on mineral trioxide aggregate immersed in different fluids . Dent. Mater. J. 2010; 29: 512-517 .

---

doi:10.4012/dmj.2009-133

JOI JST.JSTAGE/dmj/2009-133

Copyright (c) 2010 The Japanese Society for Dental Materials and Devices

---

[View "Advance Publication" version \(September 1, 2010\).](#)

---



---

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

