

## QUALITATIVE AND QUANTITATIVE ANALYSIS OF ELUTED COMPOUNDS FROM DENTAL PRIMERS

F.-X. Reichl<sup>1</sup>, M. Seiss<sup>2</sup>, W. Marquardt<sup>1</sup>, A. Oxyinos<sup>2</sup>, M. Folwaczny<sup>1</sup>, J. Glas<sup>1</sup>, K. Kehe<sup>2</sup>, R. Hickel<sup>1</sup>

Primers are used as dental restorative materials in the dental adhesive bonding technique. Unconverted comonomers, e.g. 2-hydroxyethylmethacrylate (HEMA), can be released from restorative dental materials and can enter the body in humans. This study was evaluated to qualify and to quantify eluted compounds from various dental primers. Following primers were tested: Bioactiv Primer A (Saremco)\*\*, OptiBond Solo Plus Etch Primer (Kerr), OneCoat Self Etching Bond Primer 1 (Coltène), and Clearfil SE Bond Primer (Kuraray Dental).

Unpolymerized primers (20 mg) were incubated in GC vials with 1 ml dest. water or 1 ml methanol, each at 37 °C for 24 hours. Aliquots were taken, and eluted compounds were analyzed with the method of gas chromatography - mass spectrometry (GC-MS) and liquid chromatography - mass spectrometry (LC-MS).

Following eluted comonomers were found and quantified (µg/ml; mean±sem; n=3):

Primer	detected comonomers		detected comonomers	
	dest. water		methanol	
	HEMA	EGDMA	HEMA	EGDMA
Bioactiv Primer A**	n.d.*	n.d.*	n.d.*	n.d.*
OptiBond Solo Plus Etch Primer	6.0 ± 0.3	n.d.*	13.2±0.5	1.8 ± 0.1
OneCoat Self Etching Bond Primer 1	7.8 ± 1.3	n.d.*	8.6 ± 0.4	4.8 ± 0.6
Clearfil SE Bond Primer	12.7 ± 0.5	n.d.*	5.2 ± 0.5	n.d.*

\* n.d. = not detectable

Following range of the eluted and detected comonomers from dental primers was found in dest. water (decreasing elution): Clearfil SE Bond Primer (Kuraray Dental) > OneCoat Self Etching Bond Primer 1 (Coltène) > OptiBond Solo Plus Etch Primer (Kerr) >>> Bioactiv Primer A (Saremco)(HEMA n.d.).

<sup>1</sup> Department of Operative Dentistry and Periodontology, Ludwig-Maximilians-University of Munich, Goethestr. 70, 80336 Munich, Germany

<sup>2</sup> Walther-Straub-Institute of Pharmacology and Toxicology, Ludwig-Maximilians-University of Munich, Goethestr. 31, 80336 Munich, Germany

\*\* Bioactiv Primer A (Saremco) is available under the name “**cmf prime**”

published “Naunyn-Schmiedeberg’s Archives”, March 2007