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ONLINE ISSN : 1881-1361

PRINT ISSN : 0287-4547

**Dental Materials Journal**

Vol. 25 (2006) , No. 2 p.345-351

[\[Image PDF \(2210K\)\]](#) [\[References\]](#)**Comparison of Four Fluoride Etchants in Bonding between Titanium and a Self-curing Luting Agent**[Yohsuke TAIRA](#)<sup>1)</sup>, [Lei YANG](#)<sup>1)</sup> and [Mitsuru ATSUTA](#)<sup>1)</sup>

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(Received January 13, 2006)

(Accepted March 29, 2006)

**Abstract:**

The purpose of the present study was to investigate the efficacy of four different fluoride etchants in titanium bonding. The etchants were aqueous solutions of 5wt% sodium fluoride (NaF), ammonium fluoride (NH<sub>4</sub>F), sodium hydrogen fluoride (NaFHF), and ammonium hydrogen fluoride (NH<sub>4</sub>FHF). Cast specimens of commercially pure titanium were air-abraded with alumina, etched for 30 seconds, and then primed with a phosphate primer. An acrylic rod was bonded to the specimen with a tri-*n*-butylborane-initiated self-curing luting agent. Shear bond strengths were determined before and after 10,000 thermocycles. Regarding pre-thermocycling bond strength, there were no significant differences among the etchants. After thermocycling, there was a decrease in bond strength for all groups. Nonetheless, the bond strengths of NaFHF and NH<sub>4</sub>FHF were significantly higher than those of NaF, NH<sub>4</sub>F, and non-etched control. In terms of bonding durability between resin and titanium, it was significantly improved when the titanium surface was microscopically roughened with alumina blasting and etching using NaFHF or NH<sub>4</sub>FHF.

**Key words:**[Metal](#), [Adhesive bonding](#), [Surface treatment](#)[\[Image PDF \(2210K\)\]](#) [\[References\]](#)

To cite this article:

Yohsuke TAIRA, Lei YANG and Mitsuru ATSUTA. Comparison of Four Fluoride Etchants in Bonding between Titanium and a Self-curing Luting Agent . Dent. Mater. J. 2006; 25: 345-351 .

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doi:10.4012/dmj.25.345

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