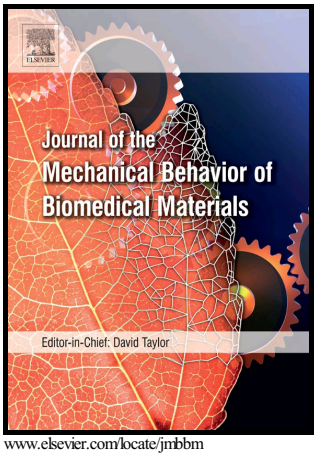

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How does hydrofluoric acid etching affect the cyclic load-to-failure of lithium disilicate restorations?

Catina Prochnow[a], Gabriel Kalil Rocha Pereira[b], Andressa Borin Venturini[a], Maitê Munhoz Scherer[a], Marília Pivetta Rippe[a], Marco Cícero Bottino[c], Cornelis Johannes Kleverlaan[d], Luiz Felipe Valandro[a*]

[a]Faculty of Odontology, Department of Restorative Dentistry, Federal University of Santa Maria, Santa Maria, Rio Grande do Sul State, Brazil.
[b]MSciD Graduate Program, School of Dentistry, Meridional Faculty - IMED, Passo Fundo, Rio Grande do Sul State, Brazil.
[c]Department of Cariology, Restorative Sciences and Endodontics, University of Michigan School of Dentistry, Ann Arbor, MI, USA.
[d]Academic Centre for Dentistry Amsterdam (ACTA), Department of Dental Materials Science, University of Amsterdam and Vrije Universiteit Amsterdam, Amsterdam, The Netherlands
catinaprochnow@hotmail.com
gabrielkrpereira@hotmail.com
andressa.venturini@hotmail.com
maitemunhozscherer@hotmail.com
mariliarip@hotmail.com
mbottino@umich.edu
c.kleverlaan@acta.nl
lfvalandro@gmail.com
lfvalandro@hotmail.com
***Corresponding author:** Federal University of Santa Maria, Faculty of Odontology, MDS-PhD Graduate Program in Oral Science, Prosthodontics Unit, R. Floriano Peixoto, 1184, 97015-372, Santa Maria, Brazil. Phone: +55-55-3220-9276, Fax: +55-55-3220-9272

ABSTRACT

This study investigated the effect of etching with distinct hydrofluoric acid (HF) concentrations on the cyclic load-to-failure (C_{Lf}) of simplified lithium disilicate glass-ceramic restorations adhesively cemented to a dentin analogue material. Eighty pairs of dentin analogue (G10; Ø= 10 mm; thickness= 2.0 mm) and lithium disilicate discs (IPS e.max CAD; Ø = 10 mm; thickness= 1.5 mm) were produced. For luting, the dentin analogue discs were etched (10% HF for 60 s) and received a primer coating. The inner surface of the ceramic discs was treated as follows (n= 20): non-etched/control (CTRL), or etched for 20 s with HF acid at 3% (HF3), 5% (HF5), or 10% (HF10). A silane coating was then applied onto the ceramic surfaces. Fatigue tests followed the staircase approach (initial load= 720 N; step-size= 70 N; 500,000 cycles per sample; 20 Hz) using a hemispheric stainless-steel piston (Ø= 40 mm) under water. The C_{Lf} data were analyzed using Dixon and Mood method. Topographic and fractographic analyses were conducted. C_{Lf} (in N) of HF3 (1355 ± 32.0) and HF5 (1335 ± 58.8) groups were the highest and statistically similar; HF10 presented