



<b>Title</b>	<b>Adverse interaction of all-in-one adhesives with photoaccelerators and fillers in light-cured composites</b>
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Deadline for submission: January 5, 2001

For Office Use Only:	<input type="checkbox"/> (1) Special Scheduling	Adverse interaction of all-in-one adhesives with photoaccelerators and fillers in light-cured composites. F.R.TAY <sup>1*</sup> , K.IKEMURA <sup>2</sup> , D.H.PASHLEY <sup>3</sup> ( <sup>1</sup> The University of Hong Kong, CHINA; <sup>2</sup> Shofu, Inc., JAPAN; <sup>3</sup> Medical College of Georgia, USA)	1476
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We previously reported that compromised bonding of all-in-one adhesives occurred upon delayed activation of some light-cured composites. This study further examined the effect of different types of photoaccelerators and fillers in experimental light-cured composites on the ultrastructure and bonding of two all-in-one adhesives to sound dentin. Three UDMA/TEGDMA based resins were formulated using CQ as photoinitiator and three different photoaccelerators: DMAEMA (D), a tertiary amine, TMBA (T), a barbituric acid, and DBTDL (B), a tin dilaurate salt. They were blended with two types of glass fillers, fluoride-releasing fluoroaluminosilicate glass (F) and conventional aluminosilicate glass (C) to form six experimental composites. Flat dentin surfaces were bonded with either Reactmer Bond (Shofu) or Prompt L-Pop (ESPE) and light-cured separately. The experimental composites were either light-cured immediately, or left to contact with the cured adhesives for 20 min before light-activation. Composite-dentin beams were prepared for microtensile bond testing. Both composites and unfilled resins were bonded to the adhesives after delayed light-activation and examined with TEM. Kruskal-Wallis ANOVA and Dunn's tests indicated significantly lower bond strengths ( $p < 0.05$ ) when all composites were bonded after delayed light-activation. Failure occurred along the composite-adhesive interfaces. TEM revealed formation of a salt layer between the F glass particles and the adhesive. When bonded to unfilled resins, soap-sud like blisters were found on the surface of the adhesive layer in D and B. It is concluded that uncured acidic resin monomers from air inhibition layers of all-in-one adhesives can form reaction products on prolonged contact with basic glass fillers and photoaccelerators, that prevent coupling of some composites to the adhesives (Supported by grant DE06427, NID CR)

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