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[\[PDF \(1695K\)\]](#) [\[References\]](#)**A review of our development of dental adhesives — Effects of radical polymerization initiators and adhesive monomers on adhesion**[Kunio IKEMURA](#)¹⁾ and [Takeshi ENDO](#)²⁾

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Abstract:

This paper reviews the development of dental adhesives by collating information of related studies from original scientific papers, reviews, and patent literatures. Through our development, novel radical polymerization initiators, adhesive monomers, and microcapsules were synthesized, and their effects on adhesion were investigated. It was found that 5-monosubstituted barbituric acid (5-MSBA)-containing ternary initiators in conjunction with adhesive monomers contributed to effective adhesion with good polymerization reactivity. Several kinds of novel adhesive monomers bearing carboxyl group, phosphonic acid group or sulfur-containing group were synthesized, and investigated their multi-purpose bonding functions. It was suggested that the flexible methylene chain in the structure of adhesive monomers played a pivotal role in their enhanced bonding durability. It was found that the combination of acidic monomers with sulfur-containing monomer markedly improved adhesion to enamel, dentin, porcelain, alumina, zirconia, non-precious metals and precious metals. A new poly(methyl methacrylate) (PMMA)-type adhesive resin comprising microencapsulated polymerization initiators was also found to exhibit both good formulation stability and excellent adhesive property.

Key words:[Dental adhesive resin](#), [Radical polymerization initiator](#), [Adhesive monomer](#)



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