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[\[PDF \(5603K\)\]](#) [\[References\]](#)**Effect of surface roughness on initial responses of osteoblast-like cells on two types of zirconia**[Daisuke YAMASHITA](#)¹⁾, [Miho MACHIGASHIRA](#)¹⁾, [Motoharu MIYAMOTO](#)¹⁾, [Hironobu TAKEUCHI](#)¹⁾, [Kazuyuki NOGUCHI](#)¹⁾, [Yuichi IZUMI](#)²⁾⁴⁾ and [Seiji BAN](#)³⁾

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Abstract:

The aim of this study was to evaluate the effect of surface roughness on the initial attachment of mouse osteoblast-like cells on ceria-stabilized zirconia/alumina nanocomposite (NANOZR) and yttria-stabilized zirconia (3Y-TZP) in comparison to those on pure titanium (Ti) and alumina oxide (AO). Specimens with smooth and rough surfaces were prepared by grinding with diamond paper or by sandblasting, respectively. For four substrates examined, the number of attached cells on the rough surface specimens was significantly higher than that on the smooth surface specimens ($p < 0.05$). Integrin α_5 and β_1 expression had a greater increase in rough surface specimens than in smooth surface specimens. Actin cytoskeleton organization was, however, similar for both smooth and rough surface specimens. NANOZR and 3Y-TZP produced good cell attachment, similar to Ti and AO. The overall results demonstrated that NANOZR and 3Y-TZP with rough surface could provide good initial cell responses, adequate for future implant usage.

Key words:

[Zirconia](#), [Surface roughness](#), [Osteoblast](#)

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