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[\[Image PDF \(230K\)\]](#) [\[References\]](#)**Fabrication of Biporous Low-crystalline Apatite Based on Mannitol
Dissolution from Apatite Cement**[Shinya TAJIMA](#)¹⁾, [Yuji KISHI](#)¹⁾, [Makoto ODA](#)¹⁾²⁾, [Michito MARUTA](#)²⁾, [Shigeki MATSUYA](#)²⁾ and [Kunio ISHIKAWA](#)²⁾

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Abstract:

Biporous (macro- and microporous) calcium phosphate gains much attention as a bone substitute material because of its large surface area and that it improves cell penetration. In the present study, we evaluated the feasibility of biporous, low-crystalline apatite based on dissolution of mannitol from self-setting apatite cement (BiopeX[®]). Mannitol — known as a biocompatible, easily dissolved monosaccharide alcohol — was recrystallized to obtain larger crystals. It was crushed with pestle and mortar, sieved to obtain crystals which passed through a 500- μ m mesh but which remained against a 300- μ m mesh, and then used as porogen. Although BiopeX[®] containing 60 wt% mannitol was not able to be taken out of the mold, addition of mannitol caused no initial setting inhibition to BiopeX[®] if the amount was 40 wt% or less. Similarly, transformation to apatitic product was confirmed when the apatite cement was immersed in 0.9% saline kept at 37°C for seven days. The set mass became low-crystalline, biporous apatite with approximately 60% porosity.

Key words:[Apatite cement](#), [Porous](#), [Mannitol](#)

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