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[\[Image PDF \(1148K\)\]](#) [\[References\]](#)**Comparison of Carbonate Apatite and β -tricalcium Phosphate (Resorbable Calcium Phosphates) Implanted Subcutaneously into the Back of Rats**[Motohiko NAGAYAMA](#)¹⁾, [Hiroshi TAKEUCHI](#)¹⁾ and [Yutaka DOI](#)²⁾

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Abstract:

Bioresorption and biocompatibility of carbonate apatites, both sintered and non-sintered (S-CAP and N-CAP), and of sintered β -tricalcium phosphate (β -TCP) were compared by implanting particles of these materials into the back of adult rats. Bioresorption — when evaluated non-destructively with non-decalcified tissues using microfocus X-ray tomography — was essentially the same for N-CAP and β -TCP, while S-CAP exhibited statistically lower bioresorption at 2, 4, and 12 weeks postoperatively. Biocompatibility — when evaluated by ED1 immunostaining — was in the order of β -TCP > N-CAP > S-CAP. The intensity of ED1 immunostaining decreased with time, but persisted longer in β -TCP than in S-CAP and N-CAP, indicating that β -TCP produced the strongest and most enduring stimulation of macrophages. Although no statistical differences were found in tartrate-resistant acid phosphatase (TRAP) staining among the materials at each implantation period, the degree of TRAP staining for S-CAP was statistically greater at 12 weeks than at 2 and 4 weeks, indicating that osteoclast-like cells were in part responsible for the resorption of the carbonate apatite.

Key words:



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