Effect of Adding Nano-Silicon Carbide on Mechanical Properties and Hydroxyapatite Formation in Calcium Phosphate Cements

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Calcium phosphate cements (CPCs) can be considered as a proper candidate for bone XE "tissue engineering" \f "subject", in situ-setting ability, excellent osteoconductivity, bone-replacement capability and injectability made them preferred. But CPCs low mechanical strength limits their uses to non-load-bearing applications. In the present research nano-SiC presented in to the cement composition and mechanical strength, setting time and hydroxyapatite (HA) formation were investigated. The results showed that mechanical strength of CPC without any additive after 1 day soaking was 1.79MPa which after adding 10wt. % nano-SiC reach to 4.11MPa. And also nano-SiC did not have any negative effect on HA formation ability but it increased setting time. In summary, processing parameters were tailored to achieve optimum mechanical properties and strength. Reinforced CPC may be useful in surgical sites that are not freely accessible by open surgery or when using minimally invasive techniques.