

## Kinetic Aspect Investigation of Chitosan / Nanohydroxyapatite / Na<sub>2</sub>CO<sub>3</sub> Gel System

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**Abstract :** The gelation behavior of Chitosan/nanohydroxyapatite sol in the presence of a crosslinking agent Na<sub>2</sub>CO<sub>3</sub> was investigated experimentally. In this case, the gelation time(t<sub>gel</sub>) was determined by the rheological measurements of the final mixture. The t<sub>gel</sub> has been determined from dynamic viscosity slope experiments. We found that chitosan/nHA sol with 1% nano-hydroxyapatite and 1.6% Na<sub>2</sub>CO<sub>3</sub> required coagulant performance. Hence Na<sub>2</sub>CO<sub>3</sub> and nanohydroxyapatite concentrations remain constant over the experiment. The order of reaction was first order with respect to chitosan and rate constant of the gel system was 9.0 x 10<sup>-4</sup> s<sup>-1</sup>, respectively, depending on the temperature of the system. The gelation temperature was carried out at 37 °C.

**Keywords :** kinetics, gelation, sol-gel system, chitosan/ nHA/ Na<sub>2</sub>CO<sub>3</sub> composite

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