

Title: **Ionic substitution in the crystalline structure of dicalcium phosphate dihydrate**

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Date: January 2020

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The following work focuses on how dicalcium phosphate dihydrate, $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$, is affected by the introduction of certain ions into its crystalline network.

There are several studies on the use of calcium phosphates, especially on synthetic hydroxyapatite, $\text{Ca}_{10}(\text{PO}_4)_6(\text{OH})_2$, due to its high biocompatibility and its possible biomedical applications such as bone cements, metal implant coating or regeneration of bone tissue.

However, the hydroxyapatite present in bones is poorly crystalline and contains a non-stoichiometric number of foreign ions. For this reason, other calcium phosphates such as calcium hydrogen phosphate dihydrate have been investigated due to its high resorbability and because it is easy to hydrolyze to hydroxyapatite. Moreover modifications of this inorganic compound have been studied when introducing biologically active ions to its crystalline lattice. In this case Zinc, Cobalt, Manganese, and Magnesium. More specifically it is observed how this ionic substitution modifies the dicalcium phosphate dihydrate cell parameters.