

Sol-gel synthesis and antibacterial characterization of bioactive ferrous citrate-silica hybrid materials

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Abstract.

Imbalance of the iron level in the body causes several diseases. In particular, the low level of iron, during pregnancy, is responsible for iron deficiency anemia, and even of neurodegenerative diseases. Although the treatment of iron deficiency anemia with oral iron supplements has been known, this problem still afflicts many people. The aim of this work was the synthesis of therapeutic systems, iron (II) based, by sol-gel method. In a SiO₂ matrix were embedded different weight percentages ferrous citrate (Fe(II)C). Fourier Transform Infrared (FTIR) spectroscopy was used to study the interactions among different components in the hybrid materials. The bioactivity of the synthesized hybrid materials was evaluated by the formation of a layer of hydroxyapatite on the surface of samples soaked in SBF using FTIR spectroscopy. Finally, also, the potential antibacterial properties of the different materials against two different bacteria, *Staphylococcus epidermidis* and *Pseudomonas aeruginosa*, were investigated.