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A comparative study of hydroxyapatite ($Ca_{10}(PO_4)_6(OH)_2$) using sol-gel and co-precipitation methods for biomedical applications

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In this present paper, nano HAp is synthesized by sol-gel and co-precipitation method for the application of medical field. During synthesis, the different chemical precursors like calcium nitrate tetrahydrate and diammonium hydrogen phosphate are mixed in the ratio of 1:67 ratio and ammonia solution is added to maintain the pH of 10. The synthesis of HAp powders is confirmed by Powder XRD, FT-IR, SEM and TEM. The average crystallite size for the maximum intensity peaks was found to be approximately 20 to 35 nm. The FT-IR spectrum shows that there is a presence of phosphate group at 605–634 cm^{-1}. Particle size and morphological studies were established using SEM like sphere shaped, rod-shaped, agglomerated rod-shaped morphology was observed. The chemical compositions are also identified using EDAX analysis. Rod-shaped morphology was observed using TEM.

Keywords: Hydroxyapatie, PXRD, FT-IR, SEM, TEM.