

Preparation and Characterization of Poly (ϵ -caprolactone) Loaded with Layered Double Hydroxide Nanohybrid Intercalated with Alendronate for Osteoporosis Treatment

Authors : Seyedeh Faranak Baniahmad, Soroor Yousefi

Abstract : Osteoporosis is a bone disease which increases the bone fracture risk, reduces the bone mineral density (BMD) and alters the amount and variety of proteins in bones. Antiresorptive therapy is one the most popular Osteoporosis treatment methods. In this method the bisphosphonates, hormones, calcitonin or the selective estrogen receptor modulators is replaced. In order to reduce undesirable effects and to increase the bioavailability of drug agents, the controlled drug delivery systems have been utilized. In current study, the controlled release of Alendronate from LDH-PCL with (0, 5, 10, 15 % wt. of LDH) was investigated. The results showed that the release of alendronate from the lamellar LDH incorporated into the PCL matrix is much slower than the release of alendronate from the PCL. Therefore such systems are very promising, in which the antiresorptive drug has to remain in the matrix for longer time and can be released in controlled manner.

Keywords : osteoporosis, alendronate, poly (ϵ -caprolactone), layered double hydroxide

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