DEVELOPMENT OF A MESOPOROUS SYSTEM BY SOL-GEL PROCESS USED TO CONTROLLED RELEASE INDOMETHACIN

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Abstract

Ordered mesoporous materials obtained by the sol-gel process have a number of promising applications in various fields of high technology between these controlled release of drugs. The goal was to develop polymeric systems via sol-gel process consisting of mesoporous silica and Indomethacin allowing the controlled release of the drug. The mesoporous silica was obtained by sol-gel method using the surfactant bromide cetyltrimethylammonium (CTAB) as a director of pores, distilled water, hydroxide ammonium (NH_4OH) and tetraethylorthosilicate (TEOS). For 300 mg of mesoporous silica was used 30 ml of 1 M HCl solution under reflux at 80 ° for 1 hour for activation. After activation of the mesoporous silica held incorporation of indomethacin dissolved in 5.0 ml of ethanol, 1:1 (m / m) (drug: mesoporous silica) for 24 hours. The material was dried at 40 ° C under reduced pressure. The dry mass was used for preparing implants of 200 mg average weight using hydraulic load prenssa with 3 tons for 7 seconds. The implants were within acceptable ranges for the average weight having Relative Standard Deviation (RSD) of less than 2%. The DRX patterns obtained for the mesoporous silica showed peaks at $2\theta = 2.49^{o}$. The result reports the hexagonal structure of the mesoporous silica. The infrared spectroscopy -FTIR showed the presence region characteristic for mesoporous silica activated functional groups. The infrared spectroscopy - FTIR for the implants had demonstrated zone that the drug is physically dispersed in the mesoporous silica without chemical interactions were detected. The results

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suggest that the chemical integrity of the drug is maintained upon incorporation of the drug mesoporous silica which may be favorable for controlled drug release.

Keywords: Sol-gel, controlled release, mesoporous silica.

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