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O.S.E.5

SYNTHESIS AND CHARACTERIZATION OF DLPLG NANOPARTICLES FOR CONTROLLED DELIVERY OF WATER-SOLUBLE VITAMINS

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Biodegradable polymers have become the materials of choice for a variety of biomaterials applications. In particular poly (DL-lactide-co-glycolide) (DLPLG) nanoparticles have been studied for controlled released drug delivery. In this paper we are describing new method of obtaining the system for targeted and controlled delivery of the folic acid in the body. Folic acid (pteroyl-L-glutamic acid, vitamin B₉) is a water-soluble vitamin essential in the human diet. It is an important cofactor in the synthesis of DNA and RNA, of dividing cells, particularly during pregnancy and infancy when there is an increase in cell division and growth. The DLPLG particles were obtained by chemical solvent/non-solvent method with PVP as a surfactant. The obtained DLPLG particles are non-agglomerated, uniform and with particles size in the submicron scale. The folic acid has been encapsulated into the polymer matrix by means of homogenization of the water and organic phases. The concentration of the folic acid in the water has been varied in order to obtain nanoparticles with different ratio of DLPLG and folic acid. The samples were characterized by Infrared Spectroscopy (IR) and Scanning Electron Microscopy (SEM).

O.S.E.6

GENOTOXICITY OF THE POLY-D,L-LACTIDE MICROPARTICLES ON THE HUMAN LYMPHOCYTES

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Particles generated of biodegradable material are extensively investigated as carriers for sustained drug delivery. Studies have been mainly focused on the monitoring of the drug release and of the rate of the particle degradation. However, the influence of the carrier particles on the human immune cells was only rarely addressed. In this work, the influence of the microparticles made of poly-D,L-lactide (PDLLA) on the function of human lymphocytes in a three-day culture was investigated. PDLLA microparticles have been prepared by a modified precipitation method and human lymphocytes were isolated from the blood of healthy volunteers by a Ficoll – density gradient centrifugation. Lymphocyte proliferation test and the cytochalasin B micronucleus test were used to assess the PDLLA particle effect on the lymphocytes. Results showed that PDLLA particles did not influence on the proliferation of the human lymphocytes. On the other hand, changes in the nuclei form, as well as nucleus buddings were observed. Moreover, the appearance of micronuclei could be detected. All together, these results might imply genotoxicity of the PDLLA particles, or some of the chemicals used for the particle preparation/stabilization on the human lymphocytes.