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P.S.E.22.

FREEZE-DRYING METHOD TO PRODUCE A RANGE OF PCL PARTICLES WITH TAILORED MORPHOLOGICAL PROPERTIES

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Poly (□-caprolactone) (PCL) is a widely investigated bioresorbable polymer and it has been extensively used in numerous biomaterials applications especially in tissue engineering and drug delivery systems. Freeze-dried particles of poly (□-caprolactone), with different morphological characteristics (spherical or cube in shape), were prepared by physicochemical method with solvent/non-solvent systems and by using the different types of cryoprotectants. Natural polymer poly (L-glutamic acid) (PGA) as well as disaccharide, saccharose, were used as cryoprotectant i.e. substance that is used to protect particles from freezing damage (damage due to ice formation). PGA has dual role in the synthesis; besides as cryoprotectant, it acts as stabilizer of the particles i.e. to prevent their agglomeration. The samples were characterized by Fourier transform infrared spectroscopy (FTIR) and Scanning electron microscopy (SEM). The biocompatibility of the samples was examined by the 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay. The formation of intracellular reactive oxygen species was measured spectrophotometrically using a fluorescent probe.

P.S.E.23.

ENHANCED ANTIMICROBIAL EFFICACY BY CO-DELIVERY OF PGA CAPPED SILVER NANOPARTICLES AND ASCORBIC ACID WITH POLY(LACTIDE-CO-GLYCOLIDE)

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Silver nanoparticles (AgNps) were prepared by modified chemical reduction with poly (L-glutamic acid) (PGA) as capping agent. These Ag/PGA nanoparticles (AgNpPGAs) were highly stable over the long periods of time without signs of precipitation. Ascorbic acid, a water soluble antioxidant, was encapsulated together with these stable AgNpPGAs within poly(DL-lactide-co-glycolide) polymeric matrix and their synergistic antimicrobial effect was studied. The antimicrobial activity of the samples was investigated towards six laboratory control strains from the American Type Culture Collection (ATCC) and one clinical isolate methicillin-resistant *Staphylococcus aureus* strain by the broth microdilution method. The 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide assay indicated good biocompatibility of the samples. To establish the influence of PLGA/AgNpPGA/ascorbic acid nanoparticles on intracellular ROS formation, we measured the kinetics of their formation in HepG2 cells by DCFH-DA assay. The samples were characterized by UV-VIS spectrometry, field-emission scanning electron microscopy, and transmission electron microscopy.