



PLGA as Flotilla to Deliver Anti-cancer Drugs Berberin and Doxorubicin

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Abstract

PLGA (polylactide glycolic acid) nanoparticles were prepared using biodegradable poly (D, L-lactide-co-glycolide) 75: 25, by emulsification method using PVA (Mol. Wt. 9000) or didodecyl dimethyl ammonium bromide (DMAB) as surfactant. Characterized was done using SEM and particle size analyzer. The size distribution of PLGA nanoparticles was 48–200 nm. One plant derived drug Berberine and the other synthetic anticancer drug Doxorubicin was loaded on to PLGA nanoparticles by single emulsion as well as multiple emulsion solvent evaporation techniques. Attachment of drug to PLGA was confirmed by FTIR.

Particle size analysis showed an increase in Berberine loaded PLGA from 180 to 310 nm when PVA was used as stabilizer; whereas, DMAB as a stabilizer led to precipitation. In vitro drug release analysis revealed that acidic pH of 5.5 was more suitable for release of Berberine than pH 7.4.

The encapsulation efficiency of Doxorubicin in w/o/w emulsification solvent evaporation method was found to be greatly affected by pH. The maximum encapsulation efficiency was found to be 79%. The average size of the particles was 200 nm. In vitro drug release analysis was done at pH 5.5 and pH 7.4. It

was found that Doxorubicin release was faster at pH 7.

Various statistical models were used to find drug release profile out of which Higuchi was found to be the most ideal.

Biography

Madhuri Sharon has completed PhD at the age of 24 years from Leicester University UK and Postdoctoral studies from Bolton Institute of Technology UK. She is Director of wCRNB and Managing Director of Monad Nanotech. Has published 176 papers and is editorial board member of Journal of Nanomedicine Research and Agrobios. Guided 17 Ph.D; 180 M.Tech students. Written 5 books (i) Bio-Nanotechnology: Concepts & Applications CRC Press, USA (ii) Carbon Nano forms –Application, McGrawHill, USA (iii) Nuclear Chemistry, ANE-Publisher, India (iv) Nano forms of Carbon and its application, Monad Nanotech-Publisher, India

(v) Graphene: An Introduction to the Fundamentals and Industrial Applications. Wiley, USA. She has received 5 National Awards