Surface design of particles for pharmaceutical dosage forms

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Various types of drug delivery systems have been developed in aiming at the optimal administration of drugs. Particulate drug carrier system such as liposomes, polymeric nanoparticles etc. is one of the most useful devices for drug delivery. We have focused at designing the surface of these particulate systems to improve their functions as drug carriers. Polymer coating of liposomes is one of the successful trials. The liposomes possessed the mucoadhesive property by coating their surface with chitosan (CS) and the resultant CS-coated liposomes improved the enteral absorption of peptide drugs entrapped. PVA-R coated liposomes showed the prolonged circulation of drug after iv injection. An anticancer drug entrapped in the polymer coated liposomes was effectively delivered into the tumor cell with the passive targeting effect.

The dry powder inhalation systems will be also introduced as an example of successful application in surface controlling of particles in DDS. Surface modification of the drug crystals with fine particles improved their inhalation properties. Better inhalation properties were observed by controlling the surface and morphology of the particles.

Nanotechnology is important in designing the surface of particulate drug delivery systems to develop novel and effective pharmaceutical systems.