Towards Targeted Delivery System: Nano-Encapsulation of Albumin in Polyethylene Glycol with Iron (III) Oxide Coating

Yazan Hamadneh
Islamic Educational Collage

In this work, the albumin-polyethylene glycol (PEG) nanocapsules were synthesized using infusion method, the nanocapsules were then coated with iron (III) oxide nano-particles. The albumin was used as a protein model for anti-bodies. SEM micrographs showed aggregated nano-particles with average grain size < 150 nm. the un-capsulated albumin was detected via UV-Vis spectrophotometer with the aid of burette reagent at wave length of 568 nm. The encapsulation efficiency was found to be above 55%.Coating the nano-capsules with Iron (III) oxide was achieved, as the particle size analysis showed an increase in the average particle size. The NP stability and release efficiency were tested in different buffers at different pH.The results showed that the NP had the highest stability at pH 6.8 which is the pH of the large intestines, also the NP showed that they had the highest release percentage at pH 7.4 which is the pH of the human blood. These results had opened a new horizon for targeted drug delivery systems and also for anti-tumor research.