Abstract

The creation and use of chitosan-coated $CoFe_2O_4$ nanoparticles for targeted anticancer drug delivery is the main topic of this study. The CFO nanoparticles prepared using 3 mL of verjuice extract and calcined at 800 °C were found to have effective results. In order to enable targeted delivery, the nanoparticles combine the special qualities of chitosan, a biocompatible and biodegradable polymer, with the magnetic behaviour of $CoFe_2O_4$ nanoparticles. Controlled nanoparticle size and morphology are achieved through the sol-gel synthesis process. Specific drug targeting is made possible by the functional groups that the chitosan coating offers for attaching biologically active substances. Notably, the nanoparticles efficiently transport and release a sizeable amount of doxorubicin in a pH-dependent manner. Uptake, biocompatibility, and release kinetics are evaluated by in-vitro studies.