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NANO-CARRIER SYSTEM FOR CONTROLLED RELEASE OF FOLIC ACID

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Chitosan has gained much attention as a non-toxic, biocompatible and biodegradable polymer in targeted and controlled drug delivery. The primary amine groups and the hydroxyl groups of chitosan makes it suitable for the formation of a variety of delivery vehicles. Folic acid an essential nutrient of the vitamin B complex, and is composed of three chemical structures namely 6-methylpterin, *p*-aminobenzoic acid and glutamic acid. Many disorders like megaloblastic anemia, neurological disturbances, and neural tube defects are connected with deficiency of Folic acid. Folic acid can also be used as a targeting moiety, which is specific for the folate receptors.

The present study suggests a potential folic acid delivery system and a drug targeting system based on chitosan polymer. Chitosan nanoparticles were obtained using a precipitation/ coacervation method and incubated with Folic acid to obtain Folic bound Chitosan nanoparticles. Nanoparticles were characterised using FT-IR spectrum, particle size and zeta potential analysis. Release properties of the nanoparticles were checked by suspending in Phosphate buffer solution (pH 7.4) with the aid of dialysis tubing cellulose membrane bag and analysing the amount of Folic acid released at 351 nm UV absorbance.

FTIR spectrum of Folic acid loaded Chitosan shows a similar spectrum to Chitosan particles, other than shifting of amide peak, ensuring that most of the Folic acid moieties encapsulated are inside the Chitosan particles. Particle size distribution around 487.9 nm and Zeta potential with -31.8 mV ensures that the particles are nano sized and stable. Controlled release of Folic acid from encapsulated particles over seven hours shows a distinguishable enhancement comparable to free Folic acid release.

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