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Magnetite-vitamin C nanoparticles as a potent route for treatment of iron deficiency anemia

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This research work introduces magnetite nanoparticles coated with vitamin C as a new modality for treatment of Iron Deficiency Anemia (IDA). 20 nm magnetite/vitamin C nanoparticles were synthesized and characterized for its physicochemical, biological and toxicological properties. Animal trials studies reveal that a single dose of Magnetite nanoparticles capped with vitamin C is sufficient to cure IDA either administrated intra-peritoneal (IP) or oral. Within only 10 days, administration of a single dose increases hemoglobin concentration (Hb) from 7 g/dL to 14 g/dL and RBCs counts from 3.2×10 6/mm3 up till 6.5×106/mm3. Moreover, the histopathological examination of the bone-marrow gives strong evidence that the used magnetite nanoparticles capped with vitamin C stimulate the erythropoiesis process, where the myeloid-erythroid ratio (M/E) decreases from 1.3 till 0.3, without any apparent toxicity and it does not affect hemostasis. This is conclusive prove of the high efficiency of magnetite nanoparticles capped with vitamin C as a new drug for treatment of IDA.

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