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Tri-layers polymer coating enhances biocompatibility and activity of drug-loaded magnetite nano-carrier for selective killing of colorectal cancer cells**Rehan Khan**

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Synthetic Lethal (SL) targeting of colorectal cancer cells (CRCs) using SOD1 inhibitor (LCS-1) was reported by exploiting the interaction between SOD1 and BLM. LCS-1 show poor bioavailability due to hydrophobic in nature. LCS-1-loaded nano-carrier (NC) of ~150 nm in size with three layers of polymers namely, amino cellulose, branched poly (amido-amine) and polyethylene glycol were prepared and characterized. Blank NC did not show any cytotoxicity towards HEK293 cells (0.5 mg/ml) mainly due to amino-cellulose layer whereas encapsulation of LCS-1 was achieved by branched polymer layer. LCS-1-NC showed high selectivity (104 times) towards BLM-deficient over -proficient HCT116 cells and 1.7 times increased sensitivity difference for BLM-deficient cells in comparison to LCS-1 alone. LCS-1-NC induced DNA damage and apoptosis demonstrated that LCS-1-NC is very effective and specific in killing BLM-deficient CRC cells.

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