

Cerium oxide Nanoparticles protecting tumoral cells and restoring immunosurveillance cure cancer

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An increased metabolic activity is correlated to cancer cell survival and proliferation. The increased metabolic activity of cancer cells results in an increase of oxidative stress, driving metabolic shifts that interfere with the immune response to malignant cells. A single injection of Reactive Oxygen Species (ROS) scavenging cerium oxide nanoparticles into an angioimmunoblastic T cell lymphoma mouse model showed preferential accumulation of the NPs in the spleen where an increased mitochondrial activity and increased ROS concentration was reverted to redoxstasis. In addition, in the treated models, T-CD4⁺-PD1^{high} cells driving malignancy were significantly reduced accompanied by an antitumoral activation of previously exhausted T-CD8⁺ cells, all in all, dramatically increasing survival rates.