autophagy

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Article Addendum

Autophagy induction as an efficient strategy to eradicate tumors

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The understanding of the mechanisms of cell death execution and the role that it plays in different diseases opens new therapeutic strategies. Currently, increasing evidence is being accumulated which indicates that autophagy is a frequent cell death mechanism, so the question arises: Could autophagy stimulation be considered an antitumor therapy? Several autophagy inducers have been used such as anticancer agents and, although complete tumor eradication has not been demonstrated, the antitumor effect is very promising. We have recently demonstrated that strong autophagy stimulation mediated by the combined generation of cyanide and oxidative stress could efficiently suppress tumor growth in an aggressive brain cancer model such as glioblastoma. We have used the plant enzyme linamarase, which metabolizes the innocuous substrate linamarin to generate cyanide in a continuous and controlled way inducing mitochondrial fragmentation. Glucose oxidase addition induces oxidative stress that increases cell vacuolization. The combination of both insults favors mitochondrial engulfment by vacuoles accelerating cell death that is mediated by autophagy.

Addendum to: García-Escudero V, Gargini R, Izquierdo R. Glioma regression in vitro and in vivo by a suicide combined treatment. Mol Cancer Res 2008; 6:407-17.

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