

عنوان مقاله:

Thymoquinone synergistically potentiates temozolomide cytotoxicity through the inhibition of autophagy in U87MG cell line

محل انتشار:

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تعداد صفحات اصل مقاله: 9

نویسندگان:

Mona Pazhouhi - *Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran*

Reyhaneh Sariri - *Department of Biology, Faculty of Sciences, University of Guilan, Rasht, Iran*

Arezou Rabzia - *Fertility and Infertility Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran*

Mozafar Khazaei - *Fertility and Infertility Research Center, Kermanshah University of Medical Sciences, Kermanshah, Iran*

خلاصه مقاله:

Objective(s): Glioblastoma multiforme (GBM) is one of the most lethal forms of human cancer and temozolomide (TMZ) is currently part of the standard treatment for this disease. Combination therapy using natural substances can enhance the anti-cancer activity of TMZ. The purpose of this study was to evaluate the effect of TMZ in combination with thymoquinone (TQ) on human GBM cell line (U87MG). Materials and Methods: The cell line was treated with TMZ and/or TQ. Cell viability was assessed using trypan blue and MTT assay. The effect of TMZ and/or TQ on colony-forming ability of the cells was investigated. Apoptosis and autophagy were quantified by fluorescent dye staining. The expression level of two autophagy related genes (ATG) were assessed using RT-PCR. Furthermore, nitric oxide (NO) production was detected by Griess reaction. Results: After treatment with TMZ and/or TQ, the cell viability was reduced in a time- and dose-dependent manner, and the cell survival fraction (SF) was significantly decreased ($P=0.000$). Apoptosis index of U87MG cells was also significantly increased ($P=0.000$). Autophagy was significantly increased by TMZ ($P=0.000$) and decreased by TQ ($P=0.018$). Also TMZ and/or TQ significantly decreased NO production by U87MG cell ($P=0.000$). Conclusion: TQ enhanced the anti-cancer activity of TMZ by inhibition of .autophagy at the transcriptional level and decreased the colony-forming ability and NO production of U87MG cell line

کلمات کلیدی:

Apoptosis, Autophagy, Glioblastoma multiforme, Temozolomide, Thymoquinone

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