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MicroRNA profile of polyunsaturated fatty acid treated glioma cells reveal apoptosis-specific expression changes.

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Abstract

ABSTRACT:

BACKGROUND: Polyunsaturated fatty acids (PUFAs) such as gamma-linolenic acid (GLA), arachidonic acid (AA) and docosahexaenoic acid (DHA) have cytotoxic action on glioma cells.

RESULTS: We evaluated the cytotoxic action of GLA, AA and DHA on glioma cells with specific reference to the expression of miRNAs. Relative expression of miRNAs were assessed by using high throughput nanocapillary real-time PCR. Most of the miRNA target genes that showed altered expression could be classified as apoptotic genes and were up-regulated by PUFA or temozolomide treatment, while similar treatments resulted in repression of the corresponding mRNAs, such as *cox2*, *irs1*, *irs2*, *ccnd1*, *itgb3*, *bcl2*, *sirt1*, *tp53inp1* and *k-ras*.

CONCLUSIONS: Our results highlight involvement of miRNAs in the induction of apoptosis in glioma cells by fatty acids and temozolomide.

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