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O-ONC-01 - In vitro comparison of commercial 5-aminolevulinic acid (Gliolan®) vs magistral preparation for 5-aminolevulinic acid

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Resumen

Objectives: The 5-ALA use in glioblastoma has become an important tool for their complete surgical resection. In spite of its proved cost-effectiveness, the price of commercial 5-ALA makes difficult its widespread use and the application to other cerebral tumours. We compared in vitro fluorescence between commercial 5-ALA and a magistral preparation of 5-ALA.

Material and methods: We employed U87MG, LN229, U373 and T98G glioblastoma human cells lines. We analyzed different concentrations of commercial and generic 5-ALA in cultures. The fluorescence intensity was assessed using flow cytometry and confocal microscopy. The fluorescence of culture supernatant and cellular lysis was quantified by fluorometry. We performed the statistical analysis with SPSS 23, using the Kruskal-Wallis and Mann-Whitney U tests.

Results: We found different visual fluorescence positivity between our cell lines, from no visible fluorescence of LN229 cell line to the most intense fluorescence of T98G. Instead, the fluorescence was comparable in each cell line for commercial and generic 5-ALA, both for the visual fluorescence and for the flow cytometry. Fluorometry study showed that the fluorescence was observed mainly in the lysate ($p < 0.001$) and without difference between commercial and generic 5-ALA ($p = 0.86$).

Conclusions: Our results show that 5-ALA in-vitro fluorescence with commercial and generic substance is equivalent for different human GBM cell lines. This fact encourages the development of intraoperative studies to corroborate these results, in order to reduce the cost of this surgical resource and, as a consequence, extend its use. An ongoing in vivo study has been designed by our group.