Characterization of the cytotoxic effect of *N*-(2-morpholinoethyl)-2-(naphthalen-2-yloxy)acetamide in cells derived from cervical cancer.

Cristina Martínez-Nava [1], Cuauhtémoc Pérez-González [1,*], Miguel Zavala-Sánchez [1] and Carlos Méndez-Cuesta [1]

[1] Departamento de Sistemas Biológicos, Universidad Autónoma Metropolitana, Unidad Xochimilco, Calzada del Hueso 1100, Ciudad de México 04960, México

Introduction

Cancer is a disease caused by the alteration of proto-oncogenes and tumor suppressor genes, which has a high prevalence in the population and is one of the main causes of death worldwide. For its treatment, there are different therapy options, but these are not always effective for all existing types of cancer, which gives rise to the search for new compounds.

The σ_1 receptor is one of the many factors involved in cancer, since it found to modulate cell proliferation and angiogenesis processes. Its manipulation can produce cytoprotective (Narayanan et al., 2011; Oyer et al., 2019) or cytotoxic actions (Schönthal, 2012) depending on the ligand with which it coupled. On the other hand, several normal cell types present the σ_1 receptor, however, its antagonists can only induce cell death in cancerous tissue (Spruce et al., 2004; van Waarde et al., 2015). These characteristics allow the σ1 receptor to become a possible therapeutic target.

Objetive

Evaluate the degree of cytotoxic activity of naphthoxyacetamide using a MTT cell viability assay.

Methodology

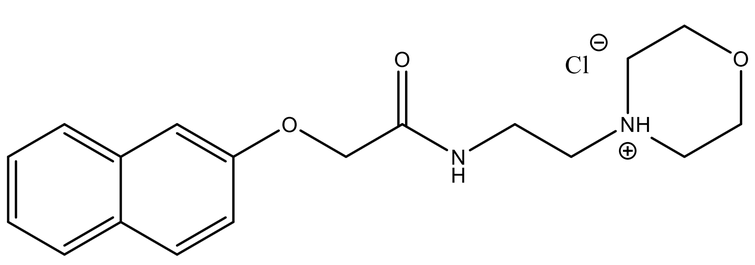
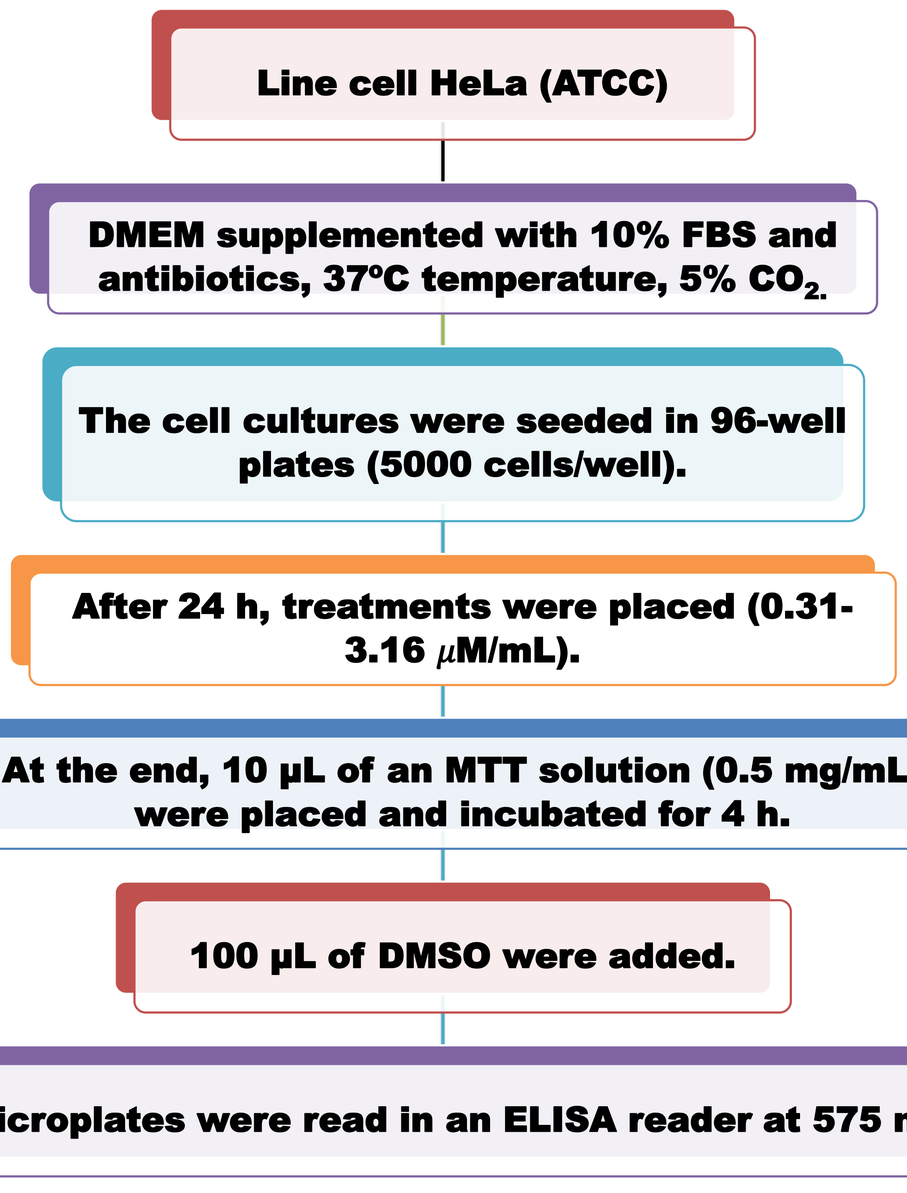


Fig. 1. Molecular structure of *N*-(2-morpholinoethyl)-2-(naphthalen-2-yloxy)acetamide



Results

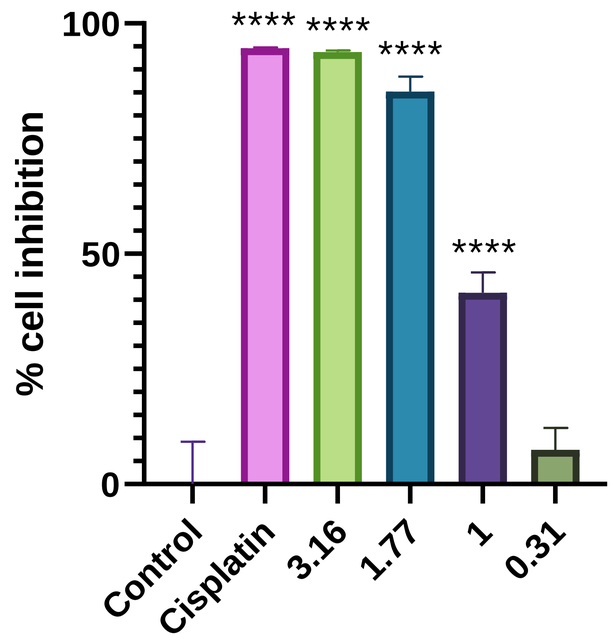


Fig. 2. The cytotoxic effect at 24 h represented in % of cell inhibition at concentrations of 3.16, 1.77, 1 and 0.31 µM/mL, using Cisplatin 3.32 µM/mL as reference drug in the MTT assay. Data are shown as Mean ± SD of n=6. ANOVA, Dunnet's post hoc test, **** p<0.0001 vs Control.

In fig. 2, it showed the cytotoxic activity at different concentrations. It can be observed the effect especially in the highest concentration which presents an inhibition percentage of 93.76%, like the effect produced by Cisplatin (94.61%).

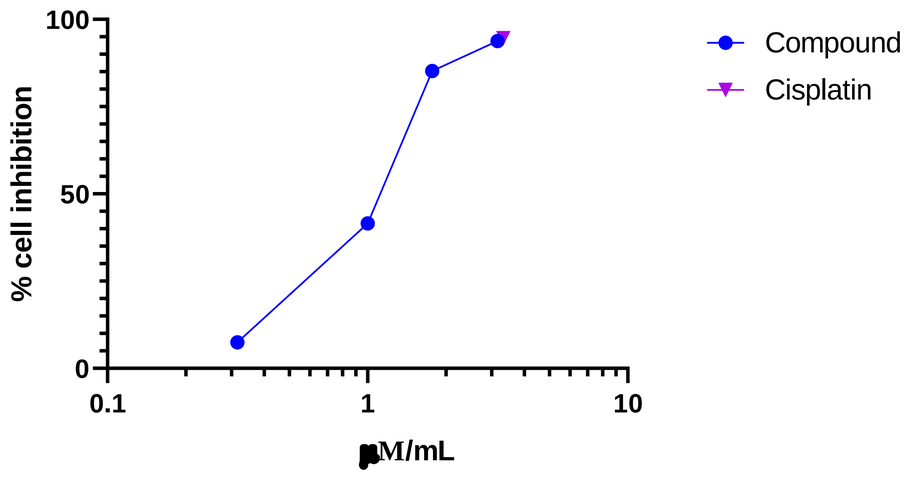


Fig. 3. Comparison of the dose-response curve of the compound and cisplatin

The results showed that *N*-(2-morpholinoethyl)-2-(naphthalen-2-yloxy)acetamide, at a concentration of 3.16 µM/ mL, has cytotoxic effects similar to those shown by the reference drug (cisplatin 3.32 µM/mL).

Conclusion

- *N*-(2-morpholinoethyl)-2-(naphthalen-2-yloxy)acetamide has cytotoxic effects like Cisplatin.
- This type of compounds can be used as leads for the design of new compounds with cytotoxic activity.

References

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