IN VITRO INVESTIGATION OF THE EFFECTS OF THE HYPOTHALAMIC NEUROPEPTIDES NESFATIN-1, OREXIN A, SPEXIN AND PHOENIXIN, WHICH INVOLVE IN THE ENERGY METABOLISM ON HUMAN GLIOBLASTOMA AND NEUROBLASTOMA CELLS

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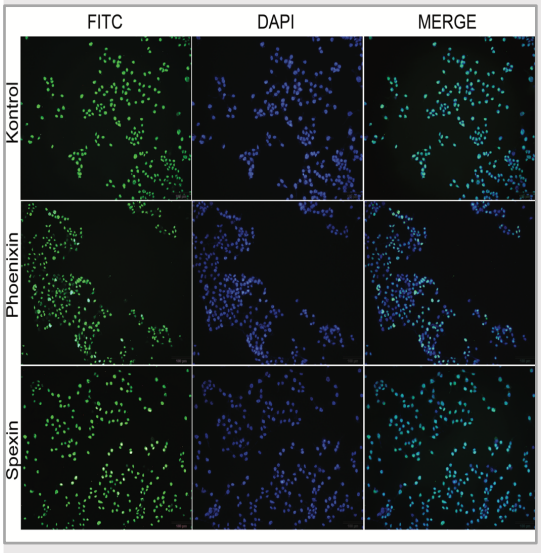

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THESIS ABSTRACT

In this study, it was aimed to determine the effects of nesfatin-1, orexin-A, spexin and phoenixin peptides, which are known to be closely related to energy metabolism, on glioblastoma and neuroblastoma cells. For this purpose, the effects of orexin-A, spexin and phoenixin at doses between 1 nM-1 µM and nesfatin-1 at doses between 1 nM-100 nM on SH-SY5Y, U373-MG, U87-MG cell viability were investigated. The effects of spexin and phoenixin peptides on cell migration, colony formation, cell proliferation and apoptosis, invasion and autophagy pathway were investigated.

Four neuropeptides were shown to have different effects on glioblastoma and neuroblastoma cell viability. Spexin increased the expression of cleaved caspase 3 and 9, PTEN, p53, beclin 1 and decreased MMP19 expression and cell proliferation in U373-MG glioblastoma cells. Phoenixin decreased colony formation in neuroblastoma cells by inducing the expression of tumour suppressors in SH-SY5Y cells and induced apoptosis and autophagy. U87-MG decreased colony formation by triggering apoptosis in glioblastoma cells. Our results suggest that spexin may be an effective anticarcinogenic agent on U373-MG glioblastoma cells, especially when used at higher doses.

APPLICATION AREAS OF THE THESIS RESULTS

This thesis will make an important contribution to cancer research and literature as the first study to shed light on the effects of spexin and phoenixin peptides on the progression of two different nervous system tumours and their relationship with cancer treatment or prognosis in these tumours.

ACADEMIC ACTIVITIES

OY, C., SEÇME, M., ELMAS, L., SUNAY, F. B., & SERTER KOÇOĞLU, S. (n.d.). Investigation of the effects of monensin on SH-SY5Y neuroblastoma cell proliferation that mediated by PI3K AKT signaling pathway. Presented at the 15th National – 1st international congress of histology and embryology.
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