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CYTOTOXIC EFFECTS OF CAPSAICIN AND CAPSICUM EXTRACTS ON NEUROBLASTOMA CELLS

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Capsaicin, a hot pepper alkaloid, has been shown to stimulate the release of serotonin and dopamine in SH-SY5Y neuroblastoma cells. Binding on vanilloid receptor 1 (TRPV1) is one of the cellular mechanisms responsible for this effect. On the other hand TRPV1 are involved in cell proliferation and apoptosis.

The **aim** of the present experiments was to investigate the effect of the potential anticancer agent capsaicin on B104 neuroblastoma cells.

Materials and methods: MTT and LDH assays were used to determine viability and cell death in B104 neuroblastoma cells. Capsicum ethanolic extracts isolated from 4 different genotypes of hot species of *Capsicum annuum* L. and capsaicin solutions in different concentrations and time of exposures were investigated.

Results: Capsaicin (500 nM, 1 μM, 10 μM) did not influence significantly viability or cell death of B104 cells when it was applied for 1 or 24 hours incubation. There was a significant cytotoxicity of high concentrations of capsaicin (100 μM), after 24 hours incubation and for capsaicin (250 μM), even when cells are treated for 1 hour. Interestingly, ethanolic capsicum extracts which contained capsaicin (0.5 mM to 2.1 mM) did not show any cytotoxic effect. We assume therefore, that other compounds (carotenoids, vitamins, and other polyphenolic substances) within the ethanolic extract interact antagonistic with the cytotoxic effect of capsaicin.

Conclusion: Our results indicate that capsaicin in high concentration has cytotoxic effects on neuroblastoma cells. The effects are time and concentration dependent. Our data are in line with previous findings in which capsaicin increased caspase-3 activity after treatment for 24 hours.

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