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## Homeopathic dilutions of *Phytolacca decandra* induce cytotoxicity of human breast adenocarcinoma cells

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### Abstract

Breast cancer is a malignant tumor frequently diagnosed in the female population that represents the main cause of cancer death in women worldwide. Recently, the use of integrative therapies such as homeopathy has increased to alleviate the side effects of conventional allopathic treatments. According to Homeopathic Materia Medica, *Phytolacca decandra* is used for treatment of breast cancer. However, the cellular and molecular effects of homeopathic medicaments have not been fully clarified. Thus, the aim of this work was to evaluate the in vitro effects of *Phytolacca decandra* homeopathic preparations on human breast adenocarcinoma cells. For this, MCF-7 breast adenocarcinoma cells were cultivated in the presence or absence of *Phytolacca decandra* mother tincture (PdMT) or centesimal Hahnemannian dilution (cH) of *Phytolacca decandra*: 30 or 200 cH. Determination of apoptosis and necrosis percentages, cytokine production and morphological changes were evaluated after 24, 48 and 72 hours of culture in each of the treatments. Results obtained in cytotoxicity analyses showed a higher percentage of death in relation to time ( $p < 0,05$ ), in cells treated with homeopathic dilutions (80%), with similar results to that presented by cells treated with Doxorubicin (95%) or PdMT (75%). In contrast, cells treated with homeopathic dilutions of *Phytolacca decandra* did not show marked differences in the production of pro and anti-inflammatory cytokines or in cell morphology when compared to untreated group. Additionally, cells treated with PdMT presented marked cellular alterations with observation of apoptotic bodies in the three evaluated times. Together, results show that homeopathic dilutions of *Phytolacca decandra* induced cytotoxicity of human breast adenocarcinoma cells in the absence of inflammatory process.

**Keywords:** MCF7 cell line, doxorubicin; integrative medicine, apoptosis, inflammatory cytokine.

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