

ABSTRACTS - ORAL PRESENTATIONS

Contribution of clinical observations to the discovery of mode of action of homeopathic medicines

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Background: Mode of action of homeopathic remedies is subject of an intense dispute in conventional and homeopathic medicine. Observations in both, clinical and basic research are contradictory to considerations or ideas of plausibility.

Aim: To evaluate whether clinically observable facts gathered during case taking will contribute to the debate of mode of action of ultramolecular homeopathic medicines.

Method: Observations during consultations in homeopathic doctors' practice without intake or body contact of remedies will be presented and discussed.

Result: Clinically observable reactions of humans to non-material application of potentized substances are contradictory to the concept of a chemical or material mechanism of action of homeopathic remedies. These observations are compatible with an immaterial nature as mode of action in these remedies.

Conclusion: Study protocols to investigate the mode of action in homeopathic remedies should take an immaterial nature of this action into consideration and should therefore be designed appropriately.

Keywords: Homeopathy, Mode of action, Practice, Remedy, Ultramolecular

Evaluation of cytotoxic and apoptotic effects of several homeopathic dilutions of *Echinacea angustifolia* on human breast, cervical and prostate cancer cells and genotoxic study of *E. angustifolia* MT

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Introduction: Cancer research needs a multi-disciplinary approach from several areas of medicine. The use of homeopathic drugs in cancer treatment has generated wide interest and controversy.

Objective: The aim of this research was to study the efficacy of homeopathic dilutions of *Echinacea angustifolia* on different cancer cell lines.

Methods: Cytotoxic activity of *E. angustifolia* mother tincture (MT) and homeopathic dilutions (6C, 30C, 200C, and 1M) was assessed on human cell lines: MDA-MB-231 (Breast cancer), HeLa (Cervical cancer) and PC-3 (Prostate cancer). Cytotoxicity was measured using the 3-(4,5-dimethylthiazolyl-2)-2,5-diphenyltetrazolium bromide (MTT) method. Apoptosis was determined by Annexin-V with flow cytometry. To demonstrate the safety of homeopathic dilutions, cytotoxicity was measured on peripheral blood mononucleated cells (PBMC). Genotoxicity was evaluated by Ames test (*in vitro*) and Micronucleus assay (*in vivo*).

Results: *E. angustifolia* homeopathic dilutions had a statistically significant decrease of cellular viability ($p < 0.05$ compared to the vehicle) on MDA-MB-231 cells. The viability percentages were MT (11.51 ± 0.81), 6C (24.21 ± 7.04), 30C (30.49 ± 9.22), 200C (24.86 ± 2.52), 1M (30.36 ± 2.61), vehicle (75.91 ± 3.64), and on HeLa cells were MT (3.71 ± 0.76), 6C (39.14 ± 10.6), 30C (45.81 ± 12.00), 200C (60.26 ± 10.16), vehicle (83.82 ± 11.56). The higher cytotoxic effects were observed with the MT on MDA-MB-231 cells, also in a lesser degree in all homeopathic dilutions. No cytotoxic effect was observed on PC-3 cells. The *E. angustifolia* MT induced death by early-apoptosis (48.6%) and late-apoptosis (34.4%) in MDA-MB-231 cells after 24 h of treatment. On the other hand, the *E. angustifolia* MT was not mutagenic and had no genotoxic effect *in vitro* or *in vivo*.

Conclusion: This study provides scientific evidence of the ability of *E. angustifolia* homeopathic dilutions to induce apoptosis in the breast cancer cell line MDA-MB-231, which encourages a possible use as supportive medicines in cancer therapy. Further *in vivo* studies of these homeopathic remedies must be performed.

Keywords: *E. angustifolia*, Homeopathy, Cancer, Cytotoxicity, Apoptosis