

Background: We conducted this study from April 2012 to April 2014 examining the feasibility of a randomized trial of the homeopathic treatment for fatigue in children and youth receiving chemotherapy. Fatigue in this population is an area of interest due to the lack of effective interventions.

Methods: This was an open label pilot study of homeopathic treatment for fatigue in pediatric cancer patients treated at The Hospital for Sick Children (SickKids) in Toronto, Canada. Children (ages 2–18), diagnosed with any type of cancer who were receiving chemotherapy administered discontinuously in courses or cycles, were considered. Participants were given individualized homeopathic treatment for 14 consecutive days following a course of chemotherapy. Recruitment rates, adverse events and remedy selection were monitored and changes in fatigue was measured using the Symptom Distress Scale (SDS), the PedsQL Multidimensional Fatigue Scale and the PedsQL Generic Core Scales and Acute Cancer Module.

Results: 155 potential participants were assessed between April 2012 and April 2014. 45 patients were eligible to be approached, 9 consented to participate and eight participants received homeopathic treatment (one withdrawal prior to treatment). Eight participants completed 14 days of assessment. SDS scores, and proxy-report fatigue scores in general fatigue and sleep/rest fatigue had significant improvement. In spite of individualized case taking Cadmium Sulfuricum was the chosen remedy at the start of each case. One participant had a clinically observed homeopathic aggravation following a dry dose administration of a constitutional remedy.

Conclusions: In this setting, a future randomized trial of individualized homeopathy is not feasible for children with cancer for the purpose of fatigue reduction. There was a significant improvement of fatigue over the study period. Future study may consider an adult population, settings more familiar with homeopathy, or other study designs such as comparative effectiveness. The routine use of Cadmium Sulfuricum may be investigated.

Keywords: Homeopathy, Chemotherapy related fatigue, Cancer related fatigue, Fatigue, Complementary medicine

Microimmunotherapeutic administration of cytokines improve the clinical symptoms in EAE an animal model of multiple sclerosis

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Experimental Autoimmune Encephalomyelitis (EAE) is one of the most used animal models in the study of Multiple Sclerosis (MS). EAE is induced by the injection of myelin proteins and specific adjuvants and leads to an important inflammatory process with activation of resident glial cells, principally microglia, which interact with infiltrated peripheral immune cells, mostly T-cells. In this context, and as described in MS, cytokines, play a crucial role in the cross-talk between these cell populations and in the modulation of the associated neuroinflammatory response. The main objective of our research is to interact in this process by modulating the immune response. Our work hypothesis is that the microimmunotherapeutic administration of specific combinations of cytokines closely related with the neuroinflammatory response may improve the clinical symptoms in EAE. To accomplish that, EAE was induced in C57BL/6 mice by injecting MOG_{35–55} and Complete Freund's Adjuvant supplemented with *Mycobacterium tuberculosis* and *Pertussis Toxin*. As control some animals were injected with saline. Both, MOG-injected and saline animals, were distributed in three groups: 1) without treatment, 2) treated with placebo and 3) treated with a stimulatory/inhibitory/modulatory combination of cytokines. The specific combination of cytokines and signalling molecules used in this study were: a) the pro-inflammatory cytokines IL-1_{beta}, IL-1_r, TNF-_{alpha}, IL-12 and IFN-_{gamma} at inhibitory dilution (30CH), b) the anti-inflammatory molecules IL-1Ra, IL-10, IL-4, PGE2, TGF-_{beta} and IL-13 at stimulatory dilution (4CH) and c) the IL-6 cytokine at modulatory dilution (15CH). The clinical score of the animals were recorded daily and both the glial response and the infiltration of peripheral immune cells were evaluated using flow cytometry and immunohistochemistry. Our results clearly demonstrated that the group administered with the cytokine combination presented a delay in the onset of clinical symptoms and a significant reduction of the clinical score during the chronic phase of the disease. These clinical changes correlated with a reduction in the microglial activation pattern and a low number of lymphocytes (around 50%). In conclusion, our results suggest that the microimmunotherapeutic administration of specific combinations of cytokines, exert a beneficial effect in EAE progress and could be a very good strategy for modulating the neuroinflammatory response associated with certain CNS-diseases such as MS.

Keywords: Immune System, Neuroinflammation, Microglia, Cytokines, Microimmunotherapy, Central nervous system, Very low doses

Carbo animalis and immune response to Ehrlich ascites tumor in mice: an experimental model

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The quality of life in cancer patients is largely related to the activity of the immune system. Clinical reports show improvement in the quality of life of terminally ill patients treated with the homeopathic medicine *carbo animalis*, however, the literature on this subject is rare. The objective of this study was to propose an experimental model to study the possible effects of *carbo animalis* in the immune response to a highly malignant carcinoma, as well as their impact on the general condition of the sick animals. Male Balb/c mice were inoculated with Ehrlich ascites tumor and treated with *carbo animalis* 6cH or 6cH + 30cH (potency association). The control group was treated with the same succussed vehicle. Clinical signs, survival and the local immune response (peritoneal) were evaluated. T lymphocytes, B1 and B2, NK cells and phagocytes were identified and quantified by immuno-cytochemistry and flow cytometry. Animals treated with *carbo animalis* 6cH + 30cH showed increase of incidence in clinical signs comparing to the other groups. The local immune response, showed increase in the proportion of CD25+ cells in relation to total T cells and increase of B1 cells compared to B2 cells in the group treated with *carbo animalis* 6cH. In contrast, animals treated with *carbo animalis* 6cH + 30cH showed increase in the number of CD3+ cells and NK cells, both adhered to tumor cells. Although the clinical significance of these findings are still under discussion, this preliminary work provides a useful experimental protocol for the study of the mechanisms of this remedy and shows the possible relevance of homeopathic potencies association in the anti-neoplasm treatments.

Keywords: Ascites Ehrlich tumor, High dilutions, Homeopathy, *Carbo animalis*, Tumor immunology, Experimental oncology

Solvatochromic dyes detect the presence of homeopathic potencies

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Evidence will be presented which demonstrates that environment sensitive solvatochromic dyes can be used to detect the presence of the full range of homeopathic potencies through changes in their visible spectra. These dyes

are characterised by possessing an oscillating dipole and it will be shown that this feature is essential for their interaction with potencies by comparison with structurally comparable non-solvatochromic dyes, which show no evidence of any sensitivity to homeopathic medicines.

It will be shown that changes in the spectra of solvatochromic dyes are due to the way these dyes aggregate, or order, in solution as a consequence of their interaction with potencies. Certain solvatochromic dyes appear to have their level of ordering enhanced by potencies, whereas others have their ordering diminished by potencies.

A hypothesis which explains the results presented will be offered and suggests that homeopathic potencies themselves may be oscillating dipoles.

Implications for clinical practice and possible connections between the relevant dye chemistry and some clinically observed effects of homeopathic medicines will be explored in the light of the discoveries being made using these fascinating and informative dyes.

The chemistry involved will be kept as simple as possible for those with a limited chemistry background, whilst maintaining the level of scientific detail necessary for an understanding of the results presented.

Keywords: Solvatochromic dyes, Homeopathic potencies, Oscillating dipoles

A retrospective cohort study on the efficacy of homeopathy compared to homeopathy plus conventional medicine in the treatment of hypertension

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Hypertension currently affects nearly one billion people worldwide. It is a major cause of global morbidity and mortality, as well as a major risk factor of various chronic and fatal diseases. Individuals suffering from hypertension have increased over the years yet the rate of controlled blood pressure (<140/90 mmHg) remains poor. While the demand for traditional, complementary and alternative medicine (T/CAM) is on the rise, more evidence is needed to evaluate whether the clinical use of homeopathy will bring any beneficial effects to the community at large. The aim of this retrospective cohort study is to evaluate the effects of homeopathic treatment compared to integrated treatment using homeopathy plus conventional pharmacotherapy in terms of blood pressure control, in order to determine its efficacy in