



Press release

Study Monitor No. 3/2022

19 September 2022. **Homeopathy works beyond the placebo effect - this is shown by numerous high-quality scientific studies. In our series Study Monitor we present research examples that prove the effectiveness of homeopathy beyond the placebo effect.**

In this third issue, we describe a laboratory study from 2022 that investigates the effect of homeopathic medicines on plants "stressed" (slightly poisoned) by arsenic. This study is of particular importance as it confirms the results of an earlier similar study in 2010.

Subject and lead author

"Critical evaluation of the specific efficacy of homeopathic preparations", by A. Ücker, Institute for Integrative Medicine, University of Witten-Herdecke; Centre for Complementary Medicine, University of Freiburg.

What is the study about?

Plants are particularly interesting for homeopathy research because the placebo effect can be completely excluded. In this study, the effects of a homeopathic preparation on duckweed - a small, floating aquatic plant that is often found in ponds and lakes - are investigated. It is often used in conventional laboratory research because it reacts to even the slightest impurities. Because of this property, these plants are also very suitable for investigating the effects of homeopathic remedies.

From earlier experiments, the hypothesis was derived that homeopathic medicines have a stronger effect on stressed duckweed than on healthy plants. Furthermore, it had been shown that arsenic is particularly suitable for these experiments, as the stress on the plants leads to growth disorders and morphological changes - both of which can be easily measured. *Lemna gibba* L., commonly known as duckweed, was therefore first stressed with arsenic. The arsenic concentration was chosen so that plant growth was significantly inhibited, but the duckweed was still sufficiently healthy to recover.

The plants were then divided into groups - one was treated with homeopathically prepared arsenic (called *Arsenicum album* in homeopathy), the other served as a control group and received only water. By observing and comparing the growth of the plants in the different groups, it could be shown that the homeopathically prepared arsenic led to a significant increase in growth - in other words, it brought the duckweed back to a healthier state.

How was the study conducted?

- It was a series of trials with duckweed. A sequence of five independent individual experiments were conducted twice over. Each experiment was blinded and randomised.

- The duckweeds were treated with one of two arsenic concentrations (158 mg/l or 250 mg/l). After 48 hours, the duckweeds were divided into groups and further cultured. The treatment groups received homeopathically prepared arsenic in one of 8 different strengths (potencies): D17, D18, D21, D22, D23, D28, D30, D33. The control groups received only water for comparison.

- The growth rates of duckweed were documented for two treatment periods (0-3 days and 3-9 days). For this purpose, the duckweeds were photographed at different times and their surface area determined.

- To determine the effect of homeopathically prepared arsenic (*Arsenicum album*), the relative growth rates of duckweed treated with arsenic were compared with those of plants treated with water only.

What are the scientific results?

The duckweeds were initially stressed with arsenic. This mild poisoning resulted in a reduction in the relative growth rate (2% at 158 mg/l arsenic and 10% at 250 mg/l arsenic) compared to untreated plants. The duckweeds treated with arsenic also showed clearly recognisable morphological changes.

The duckweeds were then divided into groups treated either with arsenic at different potencies or with water.

The study found that the plants exposed to the higher arsenic concentration responded more significantly to the homeopathic treatment than those that were less damaged. This was reflected in a significant improvement in growth rate compared to the control group (+0.89%; $p = 0.04$), which was detectable 3-9 days after administration of the homeopathic arsenic.

For the treatment period 0-3 days (+0.64%; $p = 0.10$), the differences between the groups were not significant.

The high-quality experimental design and statistical methods used in the study ensure that the results are not false positives.

What did the authors find?

- The most important finding of this study is that homeopathic preparations have an effect on living organisms.

- The study results show that duckweed poisoned with arsenic responds to treatment with homeopathically prepared arsenic.

- The study provides empirical evidence for the efficacy of homeopathic medicines, even in higher potencies.

- Since the studies involved plants, a placebo effect can be ruled out - especially since the trials were blinded.

What is the added value of the study?

This study is of particular importance because it confirms the results of an earlier study (Jäger et al., 2010).

The study by Ücker et al. provides further scientific evidence that homeopathic preparations have specific biological effects that are not due to a placebo effect.

Title of the study / source

Ücker A, Baumgartner S, Martin D, Jäger T. Critical evaluation of specific efficacy of preparations produced according to European Pharmacopeia monograph 2371. *biomedicines* 2022 Feb 25;10(3):552. doi: 10.3390/biomedicines10030552.

About the HRI

The HRI was founded in London in 2007 by physicist and cancer researcher Dr Alexander Tournier. The Institute promotes new, high-quality scientific research on homeopathy and organises international research conferences and expert meetings.

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