

Use of plant bioassays in homeopathic basic research – a systematic review

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ABSTRACT

Background: Experimental research on the effects of treatments with homeopathic preparations on plants was systematically reviewed in three research areas (unstressed plants, abiotically stressed plants, and phytopathological models) in 2009/2011.

Aims: The objective of this study was to compile a synthesis of these three recent systematic literature reviews to obtain a general overview on the use of plant bioassays in homeopathic basic research.

Methods: Literature search was carried out on publications that reported experiments with homeopathic preparations on whole plants, seeds, plant parts or cells from 1920 to 2010, in healthy, abiotically or biotically stressed conditions. Outcomes had to be measured by established state-of-the-art procedures and statistically evaluated. Using a Manuscript Information Score (MIS) those publications were identified that provided sufficient information for proper interpretation (MIS > 5). Further evaluation focused on the use of adequate controls to investigate specific effects of homeopathic preparations and on the use of systematic negative control experiments to ensure proper system performance.

Results: A total of 157 publications with plants were identified. The 157 publications described a total of 167 experimental studies. 84 studies included statistics and 48 had a MIS > 5 allowing proper interpretation. 29 studies were identified with adequate controls to identify specific effects of homeopathic preparations, reporting significant effects of decimal and centesimal homeopathic potencies, including dilution levels beyond Avogadro's number. Studies that tested series of consecutive potency levels reported a non-linear and discontinuous relation between effect and potency level. There were many individual studies with diverse methods and very few replication trials. 10 studies reported use of systematic negative control experiments, yielding evidence for the stability of the experimental set-up.

Conclusions: Plant models appear to be a useful approach to investigate basic research questions on homeopathic preparations, but more independent replication trials and systematic research are needed.

Systematic negative control experiments should be implemented on a routine basis to exclude false-positive and false-negative results.

Keywords: Plants; homeopathy; potentization; systematic review



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