

Homeopathy: Science or Fiction

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Introduction and aims

Homeopathy is defined as an alternative therapeutic method. This is based on three principles (Fig. 1) that were formulated by Samuel Hahnemann in the late eighteenth century, when explanation of the organism functioning was philosophical and not physiological.

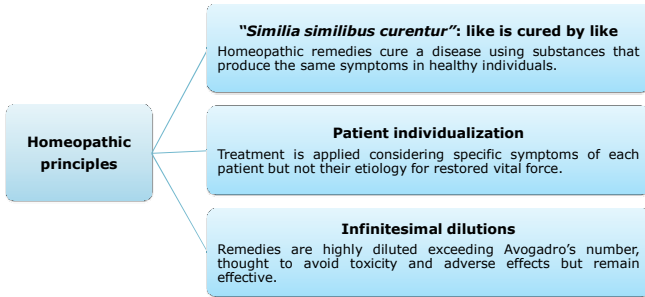


Fig.1 – Three basic principles of homeopathy.

The **action mechanism** supposedly acts using the memory of water. Thus, dilutions are shaken to link the molecules of an active substance with water molecules because they retain natural electromagnetic information from it.

This review **aims** to determine if this alternative therapy is only a placebo effect through investigation in this area which has been done so far, considering the homeopathic point of view and especially the scientific point of view.

Material and methods

• Scientific literature search on Medline (PubMed) database. The search terms used were "homeopathy", "homeopath AND meta-analysis", and "homeopath AND systematic review". The papers and reviews included were selected through review process according to their quality, data of publication and relevant information.

• Specialized books about homeopathy.

Homeopathy vs. conventional medicine

Homeopathy is criticized by the scientific community because it's opposed to conventional medicine (Table 1).

Table 1 – Main differences between homeopathy and conventional medicine (called allopathy from homeopaths).

	Homeopathy	Conventional medicine (allopathy)
Treatment	<ul style="list-style-type: none"> Dilutions that exceed the limits of Avogadro's number. Therapist – patient relationship. <p>Without demonstrated biology action.</p>	<ul style="list-style-type: none"> Drugs with active substance. <p>With demonstrated biology action.</p>
Treatment target	Individuals symptoms as a reflex of the vital force disequilibrium.	Disease's etiology.
Diseases treated	<ul style="list-style-type: none"> Cured diseases by themselves (cold...). Diseases with a good response to placebos. Diseases without defined etiology (fibromyalgia...). 	<ul style="list-style-type: none"> Diseases with defined etiology, for which drugs have been found.
Development of new treatments	Through testing different substances in healthy people and determining which symptoms cause them (<i>provings</i>).	Through drugs design with a specific effect on given target and their consequent development process.

Conclusions

- Homeopathy is a therapeutic method without a clear action mechanism demonstrated so far, and its origins are more philosophical than physiological. This suggests that it's a placebo effect.
- Systematic reviews and meta-analysis made in homeopathy have incongruous results because they have been heterogeneous, conditioned by the low quality of available information and by selection inclusion criteria discrepancy. Thus, it is necessary to invest in basic research to support or discard the action mechanism before doing it in clinical research.
- However, it's difficult to justify the actual use of these remedies without any reliable prove that show their real effects. Also it's difficult to justify the exceptional context of European legislation that involves homeopathy.

Basic investigation

This part of homeopathic investigation is important to establish its action mechanism. There are several sections in this (Fig. 2).

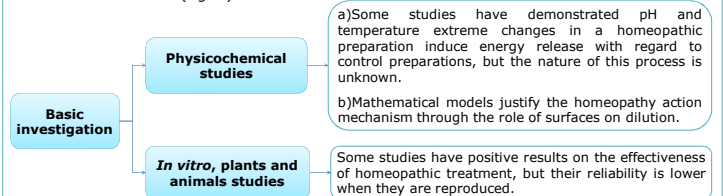


Fig. 2 – Several sections in homeopathic basic investigation.

- Some studies have demonstrated pH and temperature extreme changes in a homeopathic preparation induce energy release with regard to control preparations, but the nature of this process is unknown.
 - Mathematical models justify the homeopathy action mechanism through the role of surfaces on dilution.
- Some studies have positive results on the effectiveness of homeopathic treatment, but their reliability is lower when they are reproduced.

Systematic reviews and meta-analysis

At the moment, there is an incongruity between the results of these reviews (Table 2) that causes different interpretations according to individual subjectivity. This is due to:

- The heterogeneous between compared studies.
- The low methodological quality of some available published studies: small sample, lack of double-blind, lack of independent replicas...
- The inclusion and exclusion selection criteria discrepancy between studies.

Table 2 – Comparison between the two most cited meta-analysis and two current systematic reviews.

Reference	Included trials	Overall conclusion
Linde et al. Are the clinical effects of homeopathy placebo effects? A meta-analysis of placebo-controlled trials. <i>Lancet</i> . 1997;350	Double-blind and/or randomized placebo-controlled trials of any clinical condition (n=186).	Effects of homeopathy are not completely due to placebo.
Shang et al. Are the clinical effects of homeopathy placebo effects? Comparative study of placebo-controlled trials of homeopathy and allopathy. <i>Lancet</i> . 2005;366	Randomized placebo-controlled homeopathic trials of any clinical condition matched to placebo-controlled conventional-medicine trials (n=110).	Effects of homeopathy are not greater than placebo.
Nuhn et al. Placebo effect sizes in homeopathic compared to conventional drugs – a systematic review of randomised controlled trials. <i>Homeopathy</i> . 2010;99	Double-blind and randomized placebo-controlled trials of any clinical condition matched to placebo-controlled conventional-medicine trials (n=35).	Effects of homeopathy are not completely due to placebo.
Ernst Homeopathy: what does the "best" evidence tell us? <i>MJA</i> . 2010;192	Systematic reviews about placebo effect in homeopathy from <i>Cochrane Database of Systematic Review</i> (n=6).	Effects of homeopathy are not greater than placebo.

Scientific criticism

- Some authors argue that the main problem in determining if homeopathy is a placebo effect through systematic reviews is that the action mechanism hasn't established yet.
- P value, confidence interval (IC) and *odds ratio* (OR) may lead to erroneous conclusions if the hypothesis is not plausible, as in homeopathic mechanism action.
- Homeopaths consider that homeopathic clinical investigation requires an appropriate approach based on effectiveness (real conditions) and not efficacy (ideal conditions) considering:
 - The effect of relationship between therapist and patient.
 - Homeopathic research mustn't study groups, but individual patients, because the application of treatment refers to each patient individually.
 This argument is not valid for the scientific community because these variables are not a part of remedial action.
- Patient's satisfaction and lack of adverse effects don't justify the homeopathy use, and it can even be dangerous if it replaces conventional medicine.
- In European legislation, homeopathic products aren't required to include in their label the components and their quantities as in other foods and drugs. This lack of information isn't ethical for consumers.