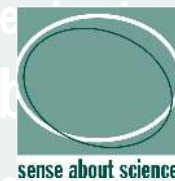


Homeopathy



Homeopathy is marketed as a safe, natural and holistic treatment for a range of ailments and illnesses, including arthritis, asthma, depression, eczema, diarrhoea, hayfever, headaches, insomnia and toothache. Homeopathic products and services have become a large industry.

Despite this, it has not been embraced by medical science. The scientific evidence shows that homeopathy acts only as a placebo and there is no scientific explanation of how it could work any other way.

Homeopathic principles

Homeopathy is based on two beliefs: (1) like cures like; and (2) the smaller the dose the more potent the cure. First, homeopaths choose a substance that causes the same symptoms as the disease they want to treat. For example, the runny nose and watery eyes of a cold can be recreated by inhaling onion fumes, so onion juice can form the basis of a homeopathic preparation. Second, the chosen substance is repeatedly diluted and shaken (also called succussed). This is supposed to reduce the substance's potential to harm, and also make it more effective.

The principles in science

Like cures like

How like may cure like has not been explained. Some homeopaths say it works like a vaccine. However, this is not true since vaccines work by priming the immune system to recognise a particular disease with a safe version of the pathogen (an altered virus, for example). The principle of like cures like holds that only the *symptoms* of the disease and treatment need match, no matter what condition or pathogen lies behind them. This is not a theory that fits with how the body works and is problematic; e.g., a headache could be a symptom of stress or a brain tumour, but the required treatments are very different.

Minimum dose

Homeopathic preparations have been diluted to such an extent that many do not contain a single molecule of the active ingredient. For example, a common dilution of 30C means that one drop of active ingredient is diluted in 100 drops of water, then a drop of the resulting solution is dissolved in another 100 drops of water, and so on, until 30 dilutions have taken place. The chance of a 30C homeopathic preparation containing one molecule of the original active ingredient is less than the chance of winning the national lottery five weeks in a row.

Homeopaths believe that water can 'remember' the active ingredient. If water had this ability, it would also remember the other substances that have been diluted into it over time, such as

Another way of saying...

Placebo – a prescription that is inert; that is, it does nothing, like a sugar pill or water. (From the Latin, *I will please*.)

Placebo effect – an effect, biological, biochemical or physiological, that emerges from an inert treatment because the patient believes it will work. (See page 2 for how placebos work.)

Not to be confused...

Proven – 'proving' is the method homeopaths use to determine the symptoms a substance causes (with a view to treating diseases with similar symptoms); after the process a substance is said to be 'proven'. Scientists use 'proven' to describe a statement that is, by logic, necessarily true.

human and animal waste, dead plants, bacteria and minerals; it would remember the test tube in which the homeopathic preparation was made.

The evidence

Over 150 clinical trials* have failed to show that homeopathy works. Some small-scale studies have yielded positive results, but this is due to poor methodologies or random effects. When all the evidence from many trials is pooled together, homeopathy is no better than a placebo.

A recent *Lancet* paper¹ compared 110 homeopathy trials with 110 conventional medicine trials. The authors found that the higher quality trials offered strong evidence that conventional medicines work and no evidence that homeopathic preparations work. In other words, the better the research, the less effective homeopathy appears. Over a dozen similar analyses have arrived at the same conclusion: that homeopathy does not perform any better than placebos.

*Clinical trials

In a sense, all pills are effective; even sugar pills can make sick people feel better if they expect to feel better. Doctors, though, need to know the difference between the 'placebo' effect and a 'clinical' effect. To do this they use clinical trials.

The gold standard clinical trial is the randomised trial. Volunteers suffering from the same ailment are split into two groups (the more people, the less likely individual peculiarities will skew the results). Half are given the real drug, and the other half are given a placebo. The trial is usually 'double blind' which means that neither the patient nor the doctor know which group each individual is in.

All conventional medicines must pass such trials to prove that they are both safe and effective before they are licensed for use.

Why homeopathy ‘works’

People use homeopathy because they believe it works. Although homeopathy, like other placebos, does not work in a clinical sense, it can induce physiological changes. It can also coincide with getting better anyway.

The placebo effect

The belief that one is receiving a treatment will often bring relief to a patient. It is known that reduction in psychological stress can accelerate recovery from wounds and viruses (by boosting immune function)² and reduce blood pressure³. So even if a ‘treatment’ is inert, it can have real effects on the body.

Conditioned responses also play a part. Past experiences of medical treatment may stimulate the immune system to act faster when a subsequent treatment (even a placebo) is received.

Stress relief and conditioning aside, however, the placebo effect is relatively weak in terms of

- **Repeatability**

Patients suffering from severe chronic pain, who use morphine regularly, may replace a morphine dose with a placebo and it will often work. However, the more frequently the placebo is administered, the less effective it becomes: the body learns to recognise the difference between the real treatment and the fake.

- **Potency**

Placebo effects only work on minor ailments. It may be effective for symptoms like pain, swelling, fatigue, nausea and so on, but it is not effective for curing broken bones, infectious diseases or cancers. In other words, its best application is dealing with symptoms of disease, not with the disease itself.

A powerful placebo?

Reports that homeopathy has cured quite serious conditions are sometimes attributed to a ‘powerful placebo effect’. But there are a number of other possible explanations that should always be discounted first.⁴

Sometimes the administration of a pill will coincide with recovery, but not be related to it. This could happen through

- **Spontaneous recovery**

Unless an illness is chronic or fatal, the body’s own recuperative processes will restore the sufferer to health.

- **Fluctuating symptoms**

For example, the pain associated with arthritis comes and goes. When the pain is bad, it will soon improve of its own accord, with or without treatment. As people tend to seek treatment when

symptoms are at their worst, it will appear that whatever medicines they took made them better. This is true of many diseases that homeopaths treat, including acne, chronic fatigue syndrome, depression and even multiple sclerosis.

Veterinary homeopathy

Homeopaths argue that homeopathy works for animals, which cannot be explained by the placebo effect. (The same is also true for babies). However, these trials depend on human observations that, without standardised observational measures or independent veterinary surgeons, can suffer significant (unintentional) bias. Those studies that correct for observational biases show that homeopathy does not work.

Some interesting placebo facts...

- The colour of a placebo pill has a discernable effect: green and blue pills act as depressants; red pills act as stimulants... except in Italian men, for whom blue pills act as stimulants.
- Two sugar pills have a stronger placebo effect than one.
- Capsules are more effective than tablets; and placebos need not be in the form of pills: placebo injections, placebo radiation and even placebo surgery can all be effective.
- Placebos are more effective when presented by health professionals of higher status than of lower status.

Prescribing placebos

Homeopathy works as a placebo, and because placebos make people ‘feel’ better, there is an argument to be made for prescribing them. However, many clinicians are reticent to do so for several reasons. First, the ethics of modern medical care demand that the relationship between the patient and the clinician should be based on honesty, respect, openness and trust. Prescribing placebos would require the doctor to lie to the patient (because otherwise the placebo would not work), which would undermine these principles.

Second, prescribing placebos is a shortcut that tends to tackle the symptoms of the disease, rather than the disease itself. For example, fatigue may be remedied with a placebo in the short term, but it could be a symptom of depression, a viral infection or worse. Letting these conditions go untreated could have severe health implications.

Last, but not least, clinically effective treatments also come with the added bonus of a placebo response. So doctors do not necessarily need to prescribe placebos to have their patients benefit from placebo effects.

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This note has been collated by Chris Tyler (ctyler@senseaboutscience.org), with kind assistance from Sense About Science advisers. September 2006

¹ Shang, A. et al. 2005 ‘Are the clinical effects of homeopathy placebo effects? Comparative study of placebo-controlled trials of homeopathy and allopathy’ *Lancet*, 366: 726-732

² Glaser, R. 2005 ‘Stress-associated immune dysregulation and its importance for human health: a personal history of psychoneuroimmunology’ *Brain, Behavior and Immunity*, 19: 3-11

³ Lovallo, W.R. & W. Gerin 2003 ‘Psychophysiological reactivity: mechanisms and pathways to cardiovascular disease’ *Psychosomatic Medicine*, 65: 36-45

⁴ Kienle, G.S. & H. Kiene 1997 ‘The powerful placebo effect: fact or fiction?’ *Journal of Clinical Epidemiology*, 50: 1311-1318