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## REVIEW

# Efficacy of homeopathy in livestock according to peer-reviewed publications from 1981 to 2014

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## Context

In cases of infectious bacterial diseases, antibiotics have been used in livestock production for decades as the first and often only effective option for individual or group treatment. Now, facing an increase of multiresistant bacteria worldwide, there is a need to reduce antimicrobial use to retain a multitude of treatment options for people and animals. Some farmers and veterinarians now use homeopathy as an alternative for treating diseases in farm animals, thus reducing the consumption of antibiotics. For organic agriculture, the use of homeopathy is even promoted by European Commission Regulation (EC No 889/2008, Article 24[2]), provided that it is effective. This effectiveness is highly controversial within the scientific community and veterinary practice, especially as the mode of action of homeopathy is still unknown. This review sought to provide knowledge on the efficacy of homeopathy in livestock and its potential to adjunct or replace standard veterinary treatment.

## Main conclusion

The aim of this review was to systematically evaluate the existing knowledge on the efficacy of homeopathic remedies in livestock and evaluate if they could replace the use of antibiotics for infectious diseases or growth promotion. It revealed that more peer-reviewed publications were in favour of homeopathy than those showing no medicinal effect. However, further evaluations presented a large heterogeneity in conditions, study conduct and scientific quality among all clinical trials. Within the studies considered, the use of the same remedy administered to the same species with a comparable medical indication was never repeated. Accordingly, conclusions drawn from those single case studies on the potential of homeopathy to reduce or replace antibiotics can only be very limited.

## Approach

The search for scientific publications was performed in February 2014 and updated up to the end of June 2016. Only publications in peer-reviewed scientific journals and doctoral theses were taken into account. The studies considered addressed the efficacy of homeopathic substances in cattle, pigs or poultry in production diseases under European or comparable conditions. The search terms were defined according to the PICOS approach. The search and filtering process was performed according to the PRISMA guidelines. For further evaluations, the following information was extracted from each study following a predefined protocol: author, publication year and source, research body, species/group, farming system, purpose of application, disease in focus, exclusion criteria, diagnostic method and person diagnosing, remedy used, as well as origin (producer), ingredients and potency of the remedy, way of administration, study design and control groups, methods of measurement, possible risk of bias and outcome of the study.

## Results

Forty-eight publications were identified featuring 52 individual clinical trials (34 trials with cattle, 12 with pigs, six

with poultry), which met the given criteria. In total, 54 per cent (n=28) were in favour of homeopathy, with 26 trials showing a significantly higher efficacy of the homeopathic remedy in comparison to a control group, whereas 42 per cent (n=22) found no benefit of the homeopathic remedy applied. Two trials had inconclusive results. A wide range of different criteria for defining recovery or cure were found and cure rates for the treatments with antibiotics, homeopathy or placebo varied to a high degree while the remedy used did not seem to make a big difference. A classic comparison of the clinical trials within a systematic review according to the principles of evidence-based medicine, involving randomisation, blinding and several clinical trials performed on the same species, disease and remedy to be evaluated in a systematic way, was not possible due to the large heterogeneity among all clinical trials. Differences emerged in various areas (patients, remedy, disease, living conditions, treatment procedures, expertise, assessment of therapeutic effects). The use of the same remedy administered to the same species with a comparable medical indication was not repeated once. Thus, the results lack any reproducibility.

## Interpretation

A considerable number of studies recorded a significantly higher efficacy for homeopathic remedies than for a control. Therefore, the potential medical efficacy of homeopathy under certain conditions cannot be ruled out. However, this does not necessarily imply that homeopathic remedies are effective under different conditions. This is especially true for the context-sensitive treatment strategy of homeopathy, which considers (beside clinical signs and the pathogen responsible) behaviour, constitution and conditions the animal is living in. The review revealed that all studies included were conducted under very specific conditions, but no trial was repeated in a comparable manner. Thus, the previous studies cannot be generalised and have to be regarded as single case studies. The first priority when medically treating animals should always be to apply the most effective treatment or remedy and thus prevent unnecessary suffering in the animal, if only for the reasons of animal welfare. Due to a lack of prognostic validity, replacing or reducing antibiotics with homeopathy currently cannot be recommended unless evidence of efficacy is reproduced by randomised controlled trials (RCTs) and proven in various farm practice conditions.

## Significance of findings

This review provides an overview on the current knowledge of the efficacy of homeopathy in livestock based on scientific publications, but to answer the question of effectiveness in everyday veterinary farm practice, more appropriate research is necessary. Promising clinical trials should be repeated as double-blind RCTs and their results confirmed on farm level. On a practical level and due to the currently unknown degree of effectiveness, farmers and veterinarians should implement an appropriate control and monitoring of the outcome of each homeopathic treatment.