Understanding Veterinary Homeopathy

Recent publications in the veterinary literature have lacked the involvement of authors who have any qualification in veterinary homeopathy. This has led to many errors, omissions and misinterpretations. It is for this reason that the author has submitted the following paper. It is not intended as a comprehensive treatise, but rather as an aid into understanding homeopathy so that informed choices can be made.

History

Not only are the Ancient Egyptians known to have treated illness using the homeopathic principle, the Ancient Greeks also refer to it; Hippocrates (*c.*460 - *c.*357 BC) is quoted thus: 'The majority of maladies may be cured by the same things that have caused them'. Paracelsus (1493-1541), one of the great medical figures of the era, proposed that medicines should be prescribed on the same basis. However, it was not until the early 19th century that the system of homeopathy was fully developed, by a German physician: Samuel Hahnemann. While translating a text by a Scottish physician by the name of Cullen, he found himself disagreeing with the author's explanation of the mode of action of Peruvian Bark (Cinchona, or 'China') in the treatment of 'Marsh Fever' He conducted an experiment by taking doses of Cinchona and found that he experienced all the physical symptoms of malaria, though without the actual fever. If he stopped taking the medicine, the symptoms gradually ceased, and if he recommenced dosing they reappeared. Hahnemann concluded therefore that the ability of Cinchona bark to relieve the symptoms of Marsh Fever depended on its ability to reproduce the symptoms when administered to a healthy individual. This he recognised as the 'homeopathic effect'.

The *Cinchona experiment* was conducted in 1790. After a great deal more work, in 1796 he published an *Essay on a New Principle For Ascertaining The Curative Powers of Drugs, and Some Examination of the Previous Principles*.

The 'Law of Similars' he encapsulated in the phrase *'Similia similibus curentur'* - 'Let likes be cured by likes'. A full description of the system was published in 1810 as *The Organon of the Medical Art*. Five further editions were to follow. The sixth edition was completed in 1842 but was not published until 1921.

Provings

In order to accumulate the information on the medicines necessary to practice homeopathy, Hahnemann tested the effects of a large number of substances on healthy individuals, mostly members of his family, friends or students. He termed the collection of symptoms produced by the administration of a medicine to a healthy subject a 'Proving' (from the German 'Prüfung' meaning 'test'). The results of these experiments were published between 1811 and 1821 as his *Materia Medica Pura*. This work ran to three editions, the last of which was published in 1830 and contained accounts of 67 medicines. Subsequently, the homeopathic Materia medica was augmented by information from toxicological events and clinical experience of practitioners using the medicines.

While Hahnemann's provings would now be considered unreliable, in 21st century they are performed using sufficient numbers and a rigid protocol which involves blinding of all participants.

Potentisation

Perhaps not surprisingly, Hahnemann found that the use of toxic medicines in the sick frequently caused a worsening of the patient's condition before the therapeutic effect appeared, and in an effort to reduce these effects he experimented with progressive dilutions of the medicines. Most of the work involved diluting the medicines one in ten or one in a hundred at each stage (the 'centesimal' dilution scale). By meticulous experimentation, Hahnemann discovered that, provided the dilution method involved vigorous shaking of each vial after each stage of dilution, (a process now known as 'succussion') the medicines not only became safer to use but also more powerful. His method of succussion was to beat the vials a pre-set number of times on a leather-bound book. As he considered that this process increased the energetic potential of the medicine he described it as 'dynamisation', but the process is now generally referred to as 'potentisation'.

The more stages of dilution and succussion a homeopathic remedy undergoes, the more potent it becomes. It is common nomenclature to consider potencies of 12th centesimal potency (12c) and below as 'low' potencies, and those above 12c as 'high'.

After 12c potency, according to the limits of Avogadro's constant there should be an infitessimal chance of the solution containing a single molecule of the original substance. However, several workers have observed nanoparticles of the original substance in high potencies e.g. Temgire et al[1] . Initially the significance of such nanoparticles was not clear, but an important step in their understanding may have been discovered by Nobel laureate Luc Montagnier, who described the capacity of nanoparticles of bacterial DNA to emit electromagnetic signals[2]. The dilutions used in his experiment were prepared by serial dilution and vorticing, the same process as is used to create homeopathic medicines and described by the author as 'critical' to its success.

For the last 30 years a global initiative of over 100 researchers from a multiplicity of disciplines (the Group Recherche sur l'infinitessimal' (*GIRI)* have been studying solutions described as 'ultra-dilutions' for 30 years. They have observed unequivocal evidence of their bioactivity. [3]

Homeopathic medicines can be distinguished from each other and from succussed alcohol or water by experiments using electrical impedance[4] and nuclear magnetic resonance.[5]

It should, however, be noted that homeopathy does not necessarily involve the use of potentised medicines above 12c – it can also be effective in material form or in low dilutions such as 6c. In contrast to this, in the sixth edition, Hahnemann describes the preparation and use of fifty millesimal potencies (labelled Q or LM), where the dilution factor is one in 50 ,000. These potencies, which Hahnemann considered to be more deeply acting but at the same time more gentle, are slowly gaining greater use as more practitioners gain experience with them; nevertheless, the overwhelming majority of

homeopathic prescriptions worldwide involve the decimal and centesimal potencies.

Homeopathic medicines

Homeopathy for individual patients ideally consists of the administration of a single homeopathic medicine at the potency deemed appropriate by the prescriber. (Unicist prescribing, sometimes known as 'Classical homeopathy').

However, on occasions, a prescriber may consider it necessary to administer more than one medicine at a time; in these circumstances a mixture of remedies may be prescribed, but still based on the symptomatology of the patient. (Multiple prescribing) - in a group of animals this approach may be used to cover the varying symptom patterns observed in the group.

Commercial companies use the expertise of the doctors or veterinarians in their employ to devise mixtures of remedies which would cover most if not all symptoms likely to be observed in any case of clinical disease e.g. 'influenza' or 'diarrhoea' (Complex prescribing).

Totality

In his many years of practice, Hahnemann observed that the best results of treatment were obtained when the symptoms obtained from the provings of a medicine matched the complete symptomatology of the patient, not just the main presenting signs. Thus, if a patient presented for treatment of one group of symptoms, it was necessary to take into account any others from which that person was suffering. Such additional symptoms are known in homeopathy as 'concomitants', and the symptoms appertaining to the physical condition are known as 'local' (sometimes 'particular') symptoms. Furthermore, such symptoms as applied to the patient's general condition, such as appetite, craving for specific foods, and the effects of environmental conditions, like heat, cold or changes in weather, also needed to be taken into account for a successful prescription. These symptoms, dealing as they do with the patient as a whole, are described as 'general' symptoms. Of even greater importance in the case-taking was an assessment of the mental and emotional state of the patient, the 'mental' symptoms.

This concept of totality is vital to an understanding of homeopathy, as it sets disease in a holistic framework, and concentrates on the individual patient and their symptoms, rather than on the named disease.

Such a complete assessment of the patient provides the optimum results of treatment, and indeed is essential in the treatment of chronic disease; it should also be noted that the treatment of chronically ill patients may necessitate a succession of medicines , each prescribed on the basis of the changes in the patient subsequent to administration of the previous medicine.

In acute diseases, matching the patient's local symptoms alone can sometimes be sufficient; however, the matching of symptoms to Materia medica must still be as accurate as possible. For instance treatment of a case of diarrhoea would require information which includes: the consistency and characteristics of the stool, such as the presence of gas,

mucus or blood; factors which aggravate or ameliorate the symptoms (denoted as 'modalities' and including such information as time, ambient temperature and movement); the presence of straining before or after the stool. Even then some attempt would also be made to take into account the general and mental symptoms of the patient.

As previously mentioned, one way of circumventing this difficulty is to use more than one medicine, hence covering a broader aspect of the case. These 'complexes' may contain several homeopathic medicines. There are several commercial companies in Europe and elsewhere, who supply homeopathic complexes; indeed, this form of homeopathy is widespread around the world. Some medical and veterinary 'homeopathic products with indications' are registered for use in the EU.

The repertory

With so many signs and symptoms to assess, and so many medicines to choose from (there are now upwards of 3000 available) it became necessary to develop a system of cross matching symptoms. This led to the development of the repertory. The most influential was devised by an American doctor , JT Kent, and was first published in 1897. A repertory consists of a list of symptoms, arranged in order of body parts, and with separate sections for general and mental symptoms, each with a list of medicines known by experience to have resolved them. Advances in technology in the late 20th Century have led to the development of computer repertories which can be continually extended and updated. Information is submitted by practitioners and a panel of experts decide whether or not to include the information in the repertory. This then provides homeopaths with a continually updated evidence base from which to work. It should be noted, however, that the repertory can at best indicate a group of medicines which may be indicated in a particular case – the final decision is made by reference to the Materia medica and requires experience and skill to be most effective.

Veterinary Homeopathy

Hahnemann himself treated animals, but the 'father' of veterinary homeopathy is generally considered to be Wilhelm Lux (1776-1849), a German veterinary surgeon, who published volume I of his *Zooiasis or Homeopathy in its Application to the Diseases of Animals* in 1837.

In the UK James Moore (1807-1886), a Scottish veterinary surgeon, championed homeopathy within the veterinary profession. A member of RCVS Council from 1873 to 1877, he was a prolific author, writing several books and pamphlets during his lifetime, such as *Outlines of Veterinary Homeopathy* (Ten editions published between 1857 and 1899) Many other books on veterinary homeopathy survive from the 19th century and the 20th century has furnished a profusion of publications in English and several other languages.

Homeopathy has continued to play a significant part in the practice of veterinary medicine in UK to the present day.
Earlier veterinary homeopaths used medicines based very much on local symptoms, but in the more enlightened times of the late 20th century it became clear that, by careful interpretation of behavior, it was possible to reliably include mental symptoms in the

patient's assessment. This has led to more accurate matching of patients to homeopathic medicine and greater success, especially in the treatment of animals suffering from chronic disease.

Some insight into this issue is gained from Bellavite et al[6] who investigated the effect of homeopathy on anxiety using standard testing procedures in rats. One of the remedies, Gelsemium , was found to be superior to diazepam, in that it increased time spent in illuminated and open areas, whereas the effect of diazepam was only equal to Gelsemium in the light- dark test.

Isopathy

This is a branch of homeopathy involving the use of potentised medicines derived from the disease or other material which is causing, or has caused, the onset of the disease.
The most common form of isopathy is the use of medicines derived from diseased material to treat or prevent that disease. Such a preparation is termed a nosode.
This form of treatment is often used by homeopaths, but where the disease is still active it must be used with caution as it may cause aggravation of the symptoms before their reduction.

Possible mechanisms of action

In the light of contemporary knowledge, Hahnemann tried to explain his observations in the language of the time. He saw his potencies as providing infinitessimal doses, but 'dynamised' by potentisation, acting on an energetic 'dynamis' (later translated as 'vital force'). Hence he advocated the use of the minimum 'dose' necessary to effect a change.
The principle of hormesis (the paradoxical dose-response curves exhibited by biological systems), goes some way towards shedding some light on the homeopathic effect. This describes the observation that small doses of a medicine cause stimulation of a process, larger doses suppress it, and larger doses still cause cessation, or death. This phenomenon is recognised in main stream toxicology and pharmacology, though seems to be absent from veterinary university curricula.

In modern times, attempts have been made to translate these terms to take account of present knowledge. Sankaran, one of the leading innovators in modern homeopathy equates the dynamis with the conventional concept of the Psycho-neuro-endocrine-immune (PNEI) axis.

Fundamental research on animals (e.g. frogs, rats, mice), plants (e.g. wheat, duck weed, peas) and cells (e.g. basophilic leucocytes) has demonstrated that highly diluted homeopathic preparations are able to cause biological effects. A recent review of biochemical, immunological, botanical, cell biological and zoological experiments on homeopathic dilutions found 98 replicated experiments with over 70% of replications positive.[7]

GIRI's research into this field is extensive; some is available in print in a book: *Signals and images.*[8]

As far back as the 1980s Dr Cyril Smith, working at the Department of Electronic and Electrical Engineering at Salford University, found that potentised solutions carry measurable electromagnetic frequencies. This work is summarised online[9]. A further voluminous reference on this area of science ('biodynamics') exists as the book *The Emerging Science of Homeopathy* by Bellavite and Signorini,[10] in which the authors examined the evidence available at the time and concluded by suggesting a plausible model of how homeopathic medicines might act on an organism. More recently, it has been discovered that homeopathic medicines contain nanostructures, including those derived from the source material.[11,12]

Montagnier's work cited previously accords with Smith's conclusion (and the long-held view of many homeopaths) that homeopathic medicines exert their effect by carrying some kind of electromagnetic signal. Maity et al[13] examined lactose tablets of three potencies of Cuprum metallicum. They reported that dielectric dispersion occurred when the tablets were subjected to a variable frequency electric field. Multiple resonant frequencies, forming a frequency set were observed repeatedly for each medicine; each medicine exhibits a set of resonant frequencies which the authors describe as its 'characteristic set'.

This follows on from the work of Lenger et al[14] who looked at high homeopathic potencies of three homeopathic remedies on sugar globuli. Stimulation with the appropriate resonant frequencies induced the phenomenon of delayed luminescence.

Recent work by Chikramane et al [15] links the hormetic phenomenon with the observed nanoparticles.

Another step forward is the growing evidence that potentised medicines are capable of influencing gene expression [16,17,]. Finally, there is emerging evidence that the medium whereby homeopathic medicines might exert their effect (Hahnemann's 'vital force') is represented by the extracellular matrix.[18] This model is reviewed in detail by Bell. [19]

In summary there is a wide variety of scientific knowledge available about the nature and action of ultradilute ('homeopathic') preparations. This document represents only a small part of that body of evidence , but it is clear that a cogent and plausible model for the mechanism of action of homeopathic medicines is emerging, within the recognised parameters of present scientific understanding.

Perhaps the last word should go to Von Wassenhoven et al [5], who, in their recent paper, describe the use of nuclear magnetic resonance to examine potentised solutions of Gelsemium sempervirens and Copper. They concluded: 'There is clear evidence that homeopathic solutions cannot be considered as pure water…we have evidenced a clear memory effect upon dilution/potentization of a substance (water, lactose, Copper, Gelsemium) reflected by different rotational correlation times and average H/H distances. A possible explanation for such a memory effect may lie in the formation of mesoscopic water structures around nanoparticles and/or nanobubbles mediated by zero-point fluctuations of the vacuum electromagnetic field as suggested by quantum field theories. The existence of an Avogadro's 'wall' for homeopathically-prepared medicines is not supported by our data. Rather it appears that all dilutions have a specific material configuration determined by the potentized substance, also by the chemical nature of the containers, and dissolved gases and the electromagnetic environment. This sensitivity of homeopathically-prepared medicines to electromagnetic fields may be amplified by the

highly non-linear processing routinely applied in the preparation of homeopathic medicines. Future work is needed in such directions. The time is now ripe for a demystification of the preparation of homeopathic remedies'.

Clinical Research

The goal of every homeopath is to become more efficient at matching the medicine to the patient. To this extent, homeopaths have always practised Evidence based medicine, taking advantage of the updates in Materia Medica, new techniques of analysis and updated Repertories.

Most research into homeopathy does not improve this skill. However, this has not prevented a wide variety of workers from investigating homeopathy, which has resulted in a large evidence base for medical homeopathy. This has been paralleled in animals, as many of the experimental models have involved animals of various species, but much work has also involved domestic animals. The British Association of Homeopathic Veterinary Surgeons and the International Association for Veterinary Homeopathy Veterinary have collected over 800 papers, on the website www.homeopathicvet.org , both from peer-reviewed and non-peer reviewed resources. There is a further number of more recent papers available on http://www.iavh.org/en/for-veterinarians/research/ . The Carstens – Stiftung site is home to the database HomVetCR (Clinical Research on Veterinary Homeopathy) which currently contains 445 entries. Finally, the Homeopathic Research Institute (HRI) is a body dedicated to collating and promoting homeopathic research and this is the natural body to consult in this field. Anyone interested in this field is recommended to start by consulting the HRI website.

As will be clear by now, there are very few circumstances when a single homeopathic medicine would be appropriate to all patients suffering from a specific named condition, hence homeopathy does not lend itself to the standard design of randomised controlled trials.

Exceptions are where a homeopathic complex or a nosode are used, or where the condition being treated has a consistent pattern. An example of the latter is Day's trial in the use of homeopathic Caulophyllum on the rate of stillbirths in pigs[20].

It is possible to design a randomised trial of individualised homeopathy, but the skill of the prescriber(s) can of course have a significant effect on the results.

Individualised homeopathy was the subject of the trial in homeopathy in the treatment of atopic dermatitis in dogs, conducted at Bristol University Veterinary School[21] Homeopathy was associated with marked clinical improvement in 5 of 20 dogs. In fact, 14 dogs improved, but only 5 exceeded the end point of 50% reduction in pruritus, which was required to justify a bigger trial. Sadly, despite achieving the necessary result, there was no support for conducting a full trial.

In this context it is vital that in the design of any trial or analysis a properly qualified doctor or veterinary surgeon is involved - in the latter trial homeopathic treatment was prescribed by a veterinary member of the Faculty of Homeopathy. The consequences of not involving such a person in the team may be poor design trial, and misinterpretation of results. One example of this is the trial conducted by de Verdier et al[22] in which calves with diarrhoea were all given the same homeopathic medicine, or placebo. Predictably all

calves in the trial suffered badly, and indeed unnecessarily. In the paper by Doehring and Sundrum (2016) [23] the lack of a qualified veterinary homeopath in the team led to this trial being classified as of low risk of bias and hence reliable.

The use of a nosode may circumvent the need to match homeopathic medicine to symptoms, but the report by Holmes et al[24], on the effect of a homoeopathic nosode on the somatic cell counts in the milk of dairy cows, also suffers from poor design: in this trial, a commercial nosode was given for a period of 3 days and the somatic cell count measured for 28 days. This is an inappropriate dosage regime; hence it is not surprising that there was no significant reduction in cell counts. Nevertheless, most homeopaths would have recognised the rise of cell count on day 3 as the aggravation one could expect in such circumstances.

These examples demonstrate the importance of model validity (MV). This was examined by Mathie et al. in 2015[25] in a paper in which only 19 of 32 RCTs were considered to have an 'acceptable MV'. In this case the authors conclude that the published findings were seldom undermined but recommended that new RCTs should maximise MV. In Doehring and Sundrum's review, in only 13 of 48 publications was homeopathy administered by a homeopathic veterinarian. Despite this 26 trials were favourable to homeopathy.

More recently, a trial into homeopathy and mastitis, by Keller and Sundrum[26] appears to suffer from the same issue; indeed, a letter to the Veterinary Record from the International Association for Veterinary Homeopathy (unpublished) raises several questions about MV, including the fact that 'as acknowledged by the authors, it is unclear whether adequate and appropriate homeopathic individualisation took place. It is also unclear if after consulting the repertorisation tool, homeopathic medicines were studied in the Materia Medica, and a simile was chosen. A repertory should never be used to select a homeopathic medicine in a standard way'.

Issues of poor MV should of course be identified in the peer review system, but unless reviewers with the necessary expertise in veterinary homeopathy are consulted, the process breaks down and invalid conclusions are published. This has a knock-on effect on systematic reviews and meta-analyses.

In contrast to these papers, a randomized, placebo controlled, double-blind study of the use of a nosode in the treatment of E. coli diarrhoea in piglets[27] showed that the treated group had significantly fewer piglets with E. coli diarrhoea; in addition, the severity of the disease was decreased, and diarrhoea, if it occurred, was of a shorter duration. The study was classified as high-quality by Doehring and Sundrum. The repeatability of this study is currently being examined in other study centres.

Doehring and Sundrum's findings were broadly consistent with the findings of a previous, high-quality, review by Mathie and Clausen[28], published in 2014, which concluded that further veterinary research is needed before firm conclusions can be drawn, and any clinical recommendations can be made. This need for further research was subsequently confirmed by another high-quality review by the same authors.[29] The latter was a Systematic review of veterinary medical conditions studied by randomized trials controlled by other than placebo (OTP). 20 RCTs were identified and Cochrane methods were used to assess risk of bias (RoB) - even the supply of the medicine at no charge was considered a risk; no trial had sufficiently low RoB to be judged as reliable evidence, hence the

conclusion that 'Due to the poor reliability of their data, OTP-controlled trials do not currently provide useful insight into the effectiveness of homeopathy in animals'.

Nevertheless a 2015 meta-analysis of randomised placebo-controlled trials in veterinary homeopathy by Mathie and Clausen[30] 9 of 15 trials showed risk of bias, however analysis showed that overall there is a positive trend in the evidence on veterinary homeopathy which is robust upon sensitivity analysis. This positive trend is unchanged whether one considers only the highest quality trials or all existing trials regardless of quality. Hence there was 'weak evidence' that homeopathy treatment is different from placebo ($p = 0.01$ for N=15 trials and $p = 0.02$ for the N=2 most reliable trials).

The authors concluded that 'Meta-analysis provides some very limited evidence that clinical intervention in animals using homeopathic medicines is distinguishable from corresponding intervention using placebos. The low number and quality of the trials hinders a more decisive conclusion.'

In a previous systematic review, on medical homeopathy[31], Mathie and Clausen discuss the issues raised by analysing a set of heterogeneous conditions, with differing homeopathic interventions. Moreover, they note that the effect size observed in the review is comparable with, for example, sumatriptan for migraine, fluoxetine for major depressive disorder and cholinesterase inhibitors for dementia.

In conclusion there are hundreds of individual trials into veterinary homeopathy. Attempts to conduct meta-analysis or systematic review on RCTs are hindered by a relative lack of quality, in particular risk of bias, but there also appears to be an issue with poor trial design, hence poor MV. Nevertheless, the trend is towards demonstrating both efficacy and, more importantly, effectiveness of homeopathy in animals. Added to this is a much larger evidence base in medical homeopathy, and this mass of information is certainly sufficient to counter the claim that homeopathy has no evidence base.

Unfortunately, there is no commercial incentive to perform research into veterinary homeopathy and there is a paucity of funding sufficient for truly independent research; indeed, the present political environment provides a disincentive for investigators to include the word 'homeopathy' in their proposals. As such any change in the situation is unlikely in the near future.

More relevant to medical and veterinary practice is the effectiveness of homeopathy in a general practice, hence the interest in clinical outcome studies.

Two papers by Mathie investigated the use of homeopathy in veterinary clinical practice. The aims were: 'to collect clinical outcomes data systematically from individualised homeopathic treatment of cats and dogs that would help to inform controlled research in feline and canine homeopathy' [32]and 'first, to gain an insight into the chronic equine problems that vets in the UK treat using homeopathy; secondly, to determine owner-assessed changes in severity of the medical problems treated in follow-up appointments; and, thirdly, to identify any trends in disease status and clinical response that might help target future controlled research in homeopathy.[33]

Response was assessed by owners as from -3 to +3. Overall response in 68.9 % of dogs were assessed by the owners as +2 or +3. The corresponding figures for cats was 63.3%. In the equine study, the figure was 86.7%.

The foregoing is in no way meant to represent a comprehensive review of the evidence base of homeopathy but hopefully will go some way towards fostering a better understanding and therefore a more informed interpretation. For any detailed investigation the sources already mentioned should be consulted.

Finally, it should not be forgotten that anecdotal evidence, case reports and individual experience constitute evidence; there are many case reports of the successful treatment of animals with homeopathy, not only in homeopathic journals, but also in mainstream publications. As Sackett reminds us: 'Evidence based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research. By individual clinical expertise we mean the proficiency and judgment that individual clinicians acquire through clinical experience and clinical practice. Increased expertise is reflected in many ways, but especially in more effective and efficient diagnosis and in the more thoughtful identification and compassionate use of individual patients' predicaments, rights, and preferences in making clinical decisions about their care.'[34]

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