13 Homeopathy Applied to Agriculture

Theoretical and Practical Considerations with Examples from Brazil

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INTRODUCTION: HISTORICAL OVERVIEW

Homeopathy, as a science and art of healing, has been used worldwide for more than two centuries. It was proposed by the physician C.F. Samuel Hahnemann (1755–1843) through the publication of his pioneering treatise in 1796 which outlined the axioms for this new area of science, 'Essay on a new principle for ascertaining the curative powers of drugs, with a few glances at those hitherto employed' (Dougeon, 1989). Nowadays and as well as treating humans, the use of homeopathy is successfully applied in agriculture to treat animals, plants and water, as well as the environment as a whole. In order to understand its role in agriculture, we need to consider its historical development.

Early in his career, Hahnemann began to realise that the health care employed at that time was neither safe nor effective. The main therapeutic methods used were blood-letting, leeches,

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blistering, intestinal purging, induced vomiting and profuse sweating, and the administering of toxic drugs such as mercury. These techniques were frequently more harmful than the diseases they were intended to cure (Dean, 2001). Disappointed with this practice of medicine, Hahnemann, also a linguist, decided to give up his profession and instead he kept time only to translate medical texts to earn a living (Aversa et al., 2016).

Hahnemann's crucial observation was made whilst translating, from English to German, 'A Treatise of Materia Medica' by William Cullen (1710–1790). Cullen stated that the bark of Cinchona (a flowering plant from South America), that was an accepted medicinal plant to cure for malaria, was effective because it was bitter and worked like a tonic. Disagreeing with Cullen, Hahnemann started taking himself doses of the bark powder from Cinchona and carefully observing its effects upon his own healthy body or organism. Based on his experience, he hypothesised that Cinchona bark cures malaria because, in healthy people, it can provoke similar symptoms to those caused by malaria (e.g. intermittent fever) (Fisher, 2012). Hahnemann subsequently began giving repeated doses of many common substances to healthy volunteers and recorded the symptoms they induced. This technique is known as 'proving' or undertaking a human pathogenic trial, and the descriptions of symptoms, which include physical, emotional and mental, are recorded in compendiums called Homeopathic Materia Medica (Dougeon, 1989).

After his important discovery, Hahnemann began clinical practice again, but now testing the veracity of his new principles of homeopathy, and 6 years later, he came up with the basic premise: *similia similibus curentur* or the like-cures-like principle. In the words of Hahnemann,

> We should imitate nature, which sometimes cures a chronic disease by super-adding another, and employ in the (especially chronic) disease we wish to cure, that medicine which is able to produce another very similar artificial disease, and the former will be cured; similia similibus.
>
> *Dougeon (1989: 265)*

This principle itself was not new; it had already been point it out by others such as Hippocrates and Paracelsus. Hippocrates (460–367 B.C.) observed empirically that through the similar, the disease develops, and through the use of the similar, the disease is healed (Viganò et al., 2015). Theophrastus Bombastus von Hohenheim (1493–1542), better known as Paracelsus, proposed the theory of natural signatures or 'signa naturae', according to which the therapeutic properties of plants or minerals can be deduced from some similarity between their forms or colours and the various parts of the human body (Viganò et al., 2015). Hahnemann may have taken some ideas from Paracelsus, but he did not follow its method. Instead, he emphasised that remedies must reveal their curative properties through proving in healthy human bodies and that a similar set of symptoms in an ill body would then be extinguished. In doing so, Hahnemann was the first to build a medical approach based on a principle that could be confirmed by experience. He was also the first to undertake this systematically, making it a central tenet of his method which is implicit in the name 'Homeopathy' – from Greek *homoios*, meaning similar, and *pathos*, meaning suffering (Walach et al., 2005).

Another important principle of homeopathy concerns the totality of symptoms, a kind of holism, which considers the sick organism as a whole rather than a focus only on the diseased part itself. Hahnemann advocated that remedies should be selected based on the 'total' set of symptoms, from which those more representative of the ill-individual state could be found (Hahnemann, 1810). This meant that two patients with the same clinical diagnoses, for example upper respiratory tract infection, could be treated with different remedies based on their individual characteristic symptoms. Hahnemann also insisted that only one remedy should be used for a given patient at any time considering the totality of symptoms (Hahnemann, 1842).

Throughout his life, Hahnemann continued improving his theory and adding new concepts. One such was the concept of potentisation or dynamisation, which consists of a series of successive dilutions combined with 'succussions' (vigorous shaking) of the homeopathic preparation (Brasil, 2011). At first, Hahnemann only diluted the remedies in order to minimise the side effect of any toxic

ingredients. However, after numerous observations, he noted that the dilutions should be intimately and uniformly mixed (by vigorous shaking) in order to better extract the healing power of the substance (mineral, vegetable, animal or other) (Aversa et al., 2016). Hahnemann became convinced that the healing power could be maintained, by shaking, from the less to the more diluted preparation and did not depend on the physical presence of the original active ingredients but rather on their action, which he called 'spirit-like' (Hahnemann, 1842). Homeopathic remedies are used at a wide range of dilutions (Brazil, 2011). If we take the homeopathic centesimal dilution beyond 12CH,[1] it is statistically unlikely to contain a single molecule of the original active ingredient because this surpasses Avogadro's constant (i.e. the proportionality factor that relates the number of constituent particles in a sample with the amount of substance in that sample).

The fundamental homeopathic textbook is the 'Organon of Rational Art of Healing' (Hahnemann, 1842). Hahnemann published two other important works: 'Materia Medica Pura', a compilation of homeopathic 'proving' reports, and 'Chronic Diseases', where Hahnemann revised and elaborated on his therapeutic approach (Hahnemann, 1846a,b, 1996). His original ideas have been preserved and some adaptations made since, in order to improve its practicality. This has led to the emergence of different schools of homeopathy (Madsen, 2019).

In relation to this, anthroposophical medicine and the biodynamic preparations – as developed by Rudolf Steiner and Ita Wegman in the early part of the last century – are sometimes erroneously classified as being based on homeopathy. Whilst some substances used may be potentised, they do not follow the principle of similarity, nor the same method of diagnosis (Steiner, 2001).

TOWARDS UNDERSTANDING THE MECHANISMS BEHIND THE CONCEPT OF HOMEOPATHY

Hahnemann himself hated speculation. His approach was purely empirical to start with, he would theorise only after numerous observations and he constantly corrected his works, resulting in six editions of the 'Organon'. He believed that the healing process was a secondary effect of a reaction by a 'life force' or dynamism of the sick organism towards health (Hahnemann, 1810).

Through consecutive dilutions and succussions, the remedies tend to the infinitesimal, exceeding Avogadro's constant, as pointed above, at which point the particles cannot be detected. According to dose dependent response, this ought to limit the action of the homeopathic preparation (Silva et al., 2005), and this fuels the argument that a placebo effect is involved. However, scientific evidence shows otherwise. Various fields of study have discussed the nature of high dilutions, ranging from attempts to extrapolate mechanistic rationality through to drawing on complexity theory using nonlinear systems models (Bell et al., 2002; Bonamin et al., 2008). Despite the alleged lack of molecules of the original active ingredients remaining, their biological effect has been systematically and regularly proven in the treatment of plants, animals and humans (Bonfin and Casali, 2012). Double-blind homeopathic trials have also eliminated any subjective (placebo) effect between the patient and the researcher (Betti et al., 2009). Silva et al. (2005) has demonstrated the mode of action of homeopathic remedies through the Quantum theory. The persistence of a biological effect allows us to hypothesise that the curative property of homeopathy may be conserved as an image impregnated in the water/alcohol solvent of the high dilutions (Silva et al., 2005). If this is the case, then the active property of the remedies may be preserved even after consecutive dynamisations, reliably identifiable with the characteristics of the original raw material.

Another approach was reported by Chikramane et al. (2010). They used electron microscopy and emission spectroscopy techniques to confirm the presence of physical entities in the form of nanoparticles, in these extreme dilutions. They suggest that the succussion process causes acoustic cavitation – a mechanism that generates vapour bubbles – and confirm corresponding patterns between the nanoparticles and the starting material. They were also able to measure differences in patterns between different dilutions of remedies when various levels of radiation were applied.

[1] CH dilutions are centesimal (C) dilutions, using Hahnemann's (H) dilution method.

Another way of understanding high dilutions is to consider the concept of vitality or life force, which can have several compositions. Zanco (2016) has shown that biophotonic techniques (the study of light photons) are suitable for detecting subtle effects in the use of high dynamised dilutions by identifying different bioelectric signals among different treatments. Also, Kokornaczyka et al. (2014) using the crystallisation method with droplet evaporation could detect structural differences amongst high dynamic dilutions.

As well as the above, homeopathy has had its theoretical–methodological framework legitimised by scientific peers in several internationally recognised journals working in biological, agrarian and/or agrarian and/or related sciences (Betti et al., 2009; Bonfim and Casali, 2012). Several *compendia* in the form of homeopathic prescriptions have been made available for the treatment of plants and animals and include the practical effects of their application (Bonato, 2007; Kaviraj, 2012; Maute, 2011).

In the following section, we will discuss homeopathy as an integrative therapy, proposed and developed by the group of Homeopathic Studies and Agroecology anchored at the Laboratory of Homeopathy and Plant Health of EPAGRI-Lages,[2] in collaboration with Santa Catarina State University and the University of Planalto Catarinense, in southern Brazil.

APPLYING THE CONCEPT OF INTEGRATIVE HOMEOPATHY

Practices such as homeopathy are embedded in a world view that considers humans as part of ecosystems. Therefore, there is a case for their application to improve not only the health of agricultural ecosystems, but also that of farmers and other humans within the system (Boff, 2009; Casali et al., 2009). Similarly, the interconnectedness of the components within an agricultural system leads us to presuppose that what makes the soil, water, plants or animals sick does the same for humans (Khatounian, 2001).

According to Boff (2009), the most effective way of ensuring the long-term health of the agroecosystem is to redesign it to maximise homeostasis or dynamic equilibrium through its own self-organising life force. This gives rise to resilience (Soule and Piper, 1992). Effective homeopathic preparations need to act on this force in order to treat the agroecosystem, as a whole or in its parts.

Systems theory explains how living organisms are dependent for their life processes on the constant exchange of energy, matter and information with their external environment, at all levels from the quantum to the macro-dimensional (Bertalanffy, 1967). The wave function in the sense of quantum theory was already used by Silva et al. (2005) to understand the mode of action by which homeopathic preparation does resonate in biological systems. A recent paper by Manzalini and Galeazzi (2019) attempts to explain homeopathy through quantum electrodynamics. In it, the authors show how each component has its own macro-wave function with its specific oscillatory pattern that resonates with other specific oscillatory patterns. In order to minimise uncertainty, this process tends towards increasing resonance with other systems around it at multiple levels, which explains how 'organelles, cells, tissues, organs, organ systems, up to a whole organism, are characterized by their own specific wave functions, whose phases are perfectly orchestrated in a multi-level coherence oneness' (Manzalini and Galeazzi, 2019: 4). This may explain how it is possible to use homeopathic remedies not only for humans but also for animals, plants and even the environment. It could be a single apple tree or the whole orchard, a single sheep or the entire herd, the farm or the farmer him/herself (see Figure 13.1). If the apple needs healing, then the orchard needs healing too; if the farmer is ill, then we can assume that the farm is ill too. Treatment may be based on an analogy of symptoms of interest or on the observation of exacerbated effects predominant in the diseased or healthy state of the plant/animal compared to the symptoms as described in the Materia Medica for humans (Casali et al., 2009; de Rezende, 2009).

The effectiveness of homeopathic therapy in agriculture is dependent on its local contextualisation which rests on the practitioner's experience of perceiving the whole sick organism, the relationships

[2] EPAGRI is the Institute of Agricultural Research and Rural Extension of Publica Service of Santa Catarina State, Brazil.

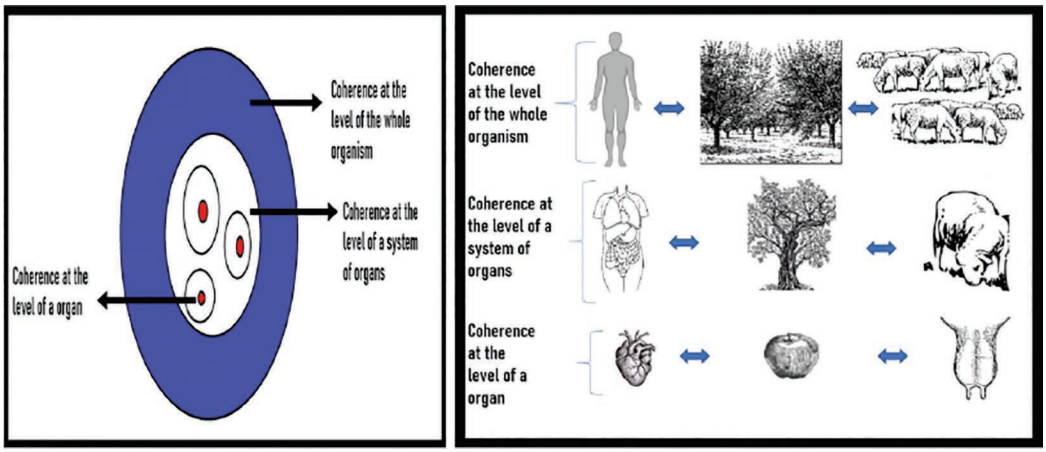

FIGURE 13.1 Levels of coherence/similarities to help select what needs to be healed. (Adapted from Manzalini and Galeazzi, 2019)

between the parts, and the emergent properties rising at different levels of the system (Boff, 2009). Further, before the healing process starts, any obstacles to healing – such as any practices misaligned with agroecological principles – should be identified and removed so that the homeopathic revitalisation of the system as a whole can be fast, smooth and lasting (Hahnemann, 1842).

However, the greatest challenge to the use of homeopathic remedies in plants and animals is applying the homeopathic principle of similarity (Carneiro, 2011). This is due to having to correlate the symptoms described in the Homeopathic Materia Medica – which were developed for and on humans – with those of diseased plants and animals, and has led to the emergence of various alternative approaches. Some practitioners use electronic instruments, electro-acupuncture devices, pendulums or their own intuition to select remedies (Jonas, 2003). Intuition, for example, is appropriate because as well as being a rapid and unconscious process, it does not follow simple, cause-and-effect logic and is able to address, integrate and make sense of multiple, complex pieces of data (Greenhalgh, 2002). Specifically with regard to biodynamic agriculture, the deep knowledge of the farm system and its components has been used to understand the influence of high dynamised dilutions on plants (Kolisko and Kolisko, 1978). Tichavský (2009) has proposed using morphological or physiological symptoms as a guide to search for the best homeopathic remedy for plant treatment. Such a biotype could be understood as the result of the morphic resonance process proposed by Sheldrake (2013) in which the starting point is a memory present in the morphic fields where homeopathy could have some action.

EXAMPLES OF THE USE OF HOMEOPATHY IN AGRICULTURE

Homeopathy has been scientifically recognised for its application in agroecosystems (Betti et al., 2009; Bonfim and Casali, 2012). Whilst researchers, practitioners and companies use different methods to select the homeopathic remedies with crops and livestock, a commonality is its success whether in conventional or in ecological based farming systems. It is important to note that homeopathy remedies can be easily deactivated whenever necessary, which makes it far safer than the use of pharmaceuticals or agrochemicals (Boff, 2009; Moreno, 2017; Savian et al., 2018).

In Brazil, companies producing homeopathic remedies have made inroads into the agricultural sector. Interestingly, the majority of clients are large scale, conventional farms producing commodities such as coffee, soybean, citrus, livestock and dairy. The contribution of homeopathic remedies in re-establishing the vitality of these systems is particularly effective owing to their poor state of health prior to treatment. In terms of diagnosis and treatment, some homeopathic companies undertake their

TABLE 13.1
***Materia Medica* for Some Farm Crops**

Homeopathic Remedy	Symptoms
Arnica Montana	In cases of stress such as when transplanting, thinning, pruning, water deficiency and sudden damage by insects/frosts/harvests
Belladonna	Too many ants (spray remedy on leaves, plants and pathways)
Carbo vegetabilis	When there is general weakness, e.g. after insect attack, defoliation, water deficiency, close spacing, flower loss, death of buds, plants in compacted soils
Staphisagria	Attack of aphids, nematodes or mites, plants in excess shade, grafted plants and artificial insemination in animals, flea infestations
Nux vomica	Plants and soils polluted by pesticides
Sulphur	Excess transpiration, plants with high fertility needs, itches and scabies in animals (the remedy induces detoxification in plants, soils and animals)
Calcarea carbonica	Plants unresponsive to good fertility, chlorosis, seedlings sensitive to cold, delay in new root growth, slow plant development and leaf yellowing, where slow composting is required, e.g. where there is a high C/N ratio

Source: de Rezende (2009).

own diagnoses and prepare remedies using local materials, whilst others use preformulated remedies but focus on advising and training the farmers to be actively engaged in the healing process and to understand the medicines as part of this process. For example, the University of Viçosa, Minas Gerais State, has produced technical guidelines for farmers on the use of homeopathy with plants, as shown in Table 13.1 (de Rezende, 2009).

Much research has explored the use of homeopathy in promoting crop growth. *Arnica montana* 30CH and *Calendula officinalis* 30CH have been shown to promote stronger regrowth and higher fresh mass weight in yerba mate (*Ilex paraguariensis)* forests after drastic pruning, thus contributing to the sustainable management of native forest resources (Domingues et al., 2019). The substitution of pesticides with homeopathic treatments has also been shown to improve the performance of rice plants and to increase grain yield (≥2,000 kg/ha) (Verdi et al., 2020). Faedo et al. (2009) verified higher germination amongst lettuce seeds treated with *Arsenicum album* 7CH: lettuce is one of the most important commercial crops and thus of income for small farmers in Brazil. Verdi et al. (2020) obtained longer branches and higher multiplication success (79%) on the root cuttings of the flowering plant popularly known in Brazil as erva-de-touro (*Poiretia latifolia)* with *Calcarea phosphorica* 20CH. The clean (toxin-free) production of this medicinal plant is commercially very important. Nunes et al. (2019), also working with medicinal plants, used *Kali carbonicum* 12CH to assist in the breakage of dormancy and average germination time of *Hypericum perforatum* (St John's Wort) seeds.

Research has also explored the use of homeopathy in pest management of tomato under field conditions (Mododon et al., 2012). For example, the control of bean weevil has been demonstrated by Deboni et al. (2017). In orchards, insect traps to which *Ac. tannicum* 30CH was added attracted 20% more *Anastrepha fraterculus* (South American fruit fly) than the control. This assisted in the reduction in the numbers of fruit flies, and it is a method that can be used in organic orchards (Brilinger et al., 2018). Giesel et al. (2012), using a high dynamised dilution (nosode) of *Acromyrmex* species (leafcutter ants) and *Belladonna* 30CH, reduced the foraging activity of two species – *A. laticeps* and *A. heyeri* – without causing colony collapse or re-colonisation elsewhere. Portales (2020) observed that when comparing homeopathy with the conventional treatments in dairy farms, homeopathy was more effective at keeping the SCC (somatic cell count per millilitre) below the 250 threshold. Prior to homeopathy treatment, only 22%, 25% and 27% of the samples from each farm had an SCC below 250. Once homeopathy treatment was started, these farms reached 66%, 56% and 46% (respectively) of days with SCC below 250.

Overall, homeopathic remedies appear to be able to harmlessly restore the dynamic equilibrium in agroecosystems. In recent studies, Bonamin (2020) verified the protective role of isotherapy (the treatment of viral and bacterial illnesses by administering dilute dosages of those microorganisms to infected patients) in *Artemia salina* (brine shrimp) exposed to pesticides and heavy metals. The treatment of *Artemia* cysts exposed to glyphosate and lead with the respective isotherapy induced better adaptation of these animals to the harmful medium, reducing problems with egg hatching and the incidence of malformations in the newborn larvae. Bonamin also observed that the treatment of a natural water source with *Phosphorus* 30 CH produced significant changes in dipole moment in water samples harvested from different and distant locales of the same environment.

THE APPROPRIATENESS OF HOMEOPATHY FOR AGROECOLOGY

The ethical and social potential of homeopathy lends itself well to the toolkit of alternative agricultural movements (Kohler and Negrão, 2018), and homeopathy in agriculture is recognised as an effective social technology (Andrade and Casali, 2011). Social technologies need to be simple, cheap, effective and accessible to all farmers without causing dependency on costly inputs. In Brazil, integrative and complementary practices – including homeopathic preparations – have been legislated for public use in the national health system, as well as in organic food production systems (Brasil, 2007).

Homeopathy has been adopted by farmers from the 'Movimento dos Trabalhadores Sem Terra' (the landless workers' movement) in Santa Catarina State. In 2018, in the city of Ponte Alta, 44 families, who cultivate around 200 ha, completed a 6-month training course, organised by the Laboratory of Homeopathy and Plant Health, on the theory and practice of homeopathy, which took place in their own communities. These farmers received homeopathic kits for general use on their farms, with the remedies in these kits being in liquid form which allowed them to make up different potencies for the treatment of livestock, plants and the environment. Through sharing this knowledge in their communities, the farmers were able to empower others and build community resilience, something which the use of purchased agrochemicals is unable to engender.

Because of its holistic nature, homeopathy also holds potential to encourage multidisciplinary collaboration. Over the last decade, the integrative homeopathy course held at the EPAGRI station in Lages and UDESC, Santa Catarina, has trained not only farmers, but also agronomists, veterinarians, holistic therapists, medical doctors, dentists, physiotherapists, psychologists, teachers, undergraduate and postgraduate students, all of whom attend the 150 hour-long course during which they discuss the philosophy of science, vitality, homeopathic science, quantum methodologies and more. Through workshops, case studies and delivering training themselves, they develop a sense of collectiveness as they experience how homeopathy can be applied in different disciplinary situations.

Other research groups, in Brazil and abroad, have also been generating knowledge and delivering extension on homeopathy. Examples are given as following. Within Brazil, there is the work of the Research Group on Biological and Alternative Phytosanitary Controls (COBALFI) and the Popular Homeopathy Group of Western Paraná (CAPA), both based at the State University of Western Paraná (UNIOESTE). Paraná state also has Carlos Bonato's team at the University of Maringa and the Paranaense Agroecology Reference Centre which has been delivering specialised courses in homeopathy for almost 15 years. At Viçosa Federal University, Minas Gerais State, Vicente Casali and his team have, since 1995, been developing participatory research aimed at popularising homeopathy amongst farmers and local communities. Further afield, in France, there is La Groupe International de Recherche sur l'Infinitésimal (International Research Group on Very Low Dose and High Dilution Effects, G.I.R.I.), which was founded in 1986 and consists of more than 100 researchers ranging from physicians, chemists, biologists, pharmacologists, physicists to agronomists, from 22 different countries. In Italy, at Bologna University, Lucietta Betti and her colleagues in the Department of Agricultural and Food Sciences are building evidence on the use of homeopathy in crop production.

FINAL CONSIDERATIONS

Over the last 30 years or so, the theoretical and methodological framework of homeopathy has expanded from the treatment of humans to that of animals, crops and agroecosystems (Bonamin, 2014). The biggest challenge of the homeopathic therapist working in agriculture is to identify the remedies that restore the dynamic equilibrium in such agroecosystems. This exercise of understanding the sick system as a unique and individualised organism, and seeking the medicine that can best remedy it whilst prioritising the most important symptoms, requires the homeopathic therapist to be an integrative healing artist.

Clearly, homeopathy in agriculture is based on a very different scientific rationality from that of Cartesian materialism, which seeks to maximise the factors of production for the continuous increase in productivity. Thus, the medic prescribing pharmaceuticals, the veterinarian prescribing drugs, or the agronomist prescribing agrochemicals is not usually receptive of homeopathy for family farmers, a concept which takes into account the entire interactive environment. Therefore, there is a need in the agricultural arena for both new concepts and new training that embrace such complexity.

Hahnemann believed that homeopathy should help people to reach the highest purpose of their existence which is living in harmony with themselves, and their (social and natural) environments. In particular, homeopathy as a social tool may assist more vulnerable communities to free themselves from the dependencies imposed by the conventional agriculture system. Agroecology is concerned with biomimicry and social issues that relate to, for example, diversity, inclusion, cooperation, complementarity and self-determination. If farmers are provided with knowledge of a theoretical and methodological framework that can deal with such complexities on their farms, and are able to apply low-cost homeopathic solutions, this provides them with a unique opportunity to enhance and work with the connectivity and integrity in the animal, plant, soil, water and human components of the agricultural organism in search of harmony of the dynamic, whole, agroecosystem.

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