Analysis Of Some Important Scientific Studies That Indirectly Validates MIT Concepts

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1. Study indicates Potentized Drugs and Parent Drugs behave differently in biological interactions- Another scientific evidence that supports MIT concepts:

If the concepts of MOLECULAR IMPRINTS are true, potentized drugs should not 'mimic' the properties of their crude 'molecular forms' as most people believe, but should act in opposite directions in biological environments. If we could experimentally prove it is actually so, that would be further proof for the validity of MIT concepts.

This question whether potentized drugs interact with biological molecules in a way different from their parent drugs is very important in the scientific understanding of molecular processes involved in homeopathic potentization and therapeutics. There are many homeopaths believing that during potentization, the medicinal properties of drugs are some way or other transferred to the potentizing medium, and hence potentized medicines can interact with human organism in the SAME way as the original drugs do.

On the contrary, only MIT proposes that potentization involves a process of ‘molecular imprinting’, in which the spacial configuration of drug molecules are imprinted into the medium as 3-D nano cavities, which can act as recognition sites towards original drug molecules or other molecules similar in configuration. As per this view, potentized medicines contain only ‘molecular imprints’ of drug molecules, which are complementary in configuration to the drug molecules. When applied for therapeutic purpose, these molecular imprints bind to the pathogenic molecules, and not to the biological targets. Molecular imprints act by removing the existing. molecular inhibitions, where as crude molecules produce molecular inhibitions of biological molecules. That means, molecular imprints should not act in a way SIMILAR to original molecules, in order to produce a therapeutic effect.

In order to prove this concept, we have to experimentally prove that potentized medicines can not interact with biological molecules in the same way as original drug

molecules used for potentization. Such an experiment is essential part of 'proving' MIT concepts.

Here I am reproducing a previously published report regarding such an experiment already conducted by a team of eminent scientists in Germany five years back. It is published in “The Journal of Alternative and Complementary Medicine. May 2006, 12(4): 359-365. doi:10.1089/acm.2006.12.359”http://www.liebertonline.com/doi/abs/10.1089/acm.2006.12.359

The team conducted this experiment to verify whether potentized HgCl2 (Mercurius corrosivus) affect the activity of Diastase and α-Amylase in a way similar to crude form of HgCl2.

Research team consisted of: 1. Claudia M. Witt, M.D. Institute for Social Medicine, Epidemiology and Health Economics, Charité University Medical Center, Berlin, Germany. 2. Michael Bluth, M.D. Institute for Social Medicine, Epidemiology and Health Economics, Charité University Medical Center, Berlin, Germany. 3. Stephan Hinderlich, Ph.D. Institute for Biochemistry and Molecular Biology, Charité University Medical Center, Berlin, Germany. 4. Henning Albrecht, Ph.D. Karl and Veronica Carstens-Foundation, Essen, Germany. 5. Rainer Lüdtke, M.Sc. Karl and Veronica Carstens-Foundation, Essen, Germany. 6. Thorolf E.R. Weisshuhn Institute for Social Medicine, Epidemiology and Health Economics, Charité University Medical Center, Berlin, Germany. 7. Stefan N. Willich, M.D., M.P.H. Institute for Social Medicine, Epidemiology and Health Economics, Charité University Medical Center, Berlin, Germany.

Their objective was to test for a stimulating or inhibiting effect of high potencies of the homeopathic remedy HgCl2 (Mercurius corrosivus) on two sugar hydrolases- (α-amylase from hog pancreas and diastase extract from winter barley)

High potencies of HgCl2 were produced using stepwise dilution plus shaking. Controls included potentized solvent (aqua bidestillata), equimolar dilutions without shaking, and enzyme-free references. Tested were potencies with dilution factors 1:200 (CC) on diastase extract from winter barley, and 1:100 (C) on α-amylase from hog pancreas. Enzyme activity was colorimetrically determined by Lugol's iodine-starch reaction.An inhibiting effect of HgCl2 on enzyme activities was observed only in low potencies and

dilutions (which contained molecules of $HgCl_2$). Statistically significant differences between potencies and controls were not found in randomized and blinded experiments.

This experimental design provided independent reproducible results of cell-free in vitro assays. However, it did not indicate an effect of potentized $HgCl_2$ on hydrolases. The researchers conclusion was that demonstrating potency effects may require additional experimental features.

My Interpretations:

Reported experiments and the results they obtained may help us in designing and conducting further in vitro experiments to prove the hypothesis put forward by DIALECTICAL HOMEOPATHY regarding potentization.

$HgCl_2$ is known in homeopathy as Merc Cor. Crude $HgCl_2$ is a known inhibitor of glucose hydrolases such as diastase and α-amylase.

Reported experiments show that similar to crude forms, lower dilutions of this compound also inhibits the hydrolyzing activity of those sugar hydrolase enzymes. Obviously, these lower dilutions contain molecules of $HgCl_2$, and hence the inhibitory action on enzymes.

Same time, these experiments clearly showed that higher potencies of $HgCl_2$ have no inhibitory action on those enzymes. That means, highly potentized $HgCl_2$ cannot ‘mimic’ the original compound as expected by some theoreticians.

This finding, though considered by the researchers as a set back to their expectations, has serious implications in proving the concepts of MIT regarding potentization.

This experiment proves that through the potentization process, the properties of original drugs are not transferred to the potenizing medium in such a way so as to enable it to ‘mimic’ the original drugs.

We homeopaths know beyond any doubt that potentized $HgCl_2$ or Merc Cor produces expected therapeutic effects when administered on the basis of principle of ‘similia similibus curentur’. That means, potentized $HgCl_2$ contains some active principles having specific biochemical properties. Since the present experiments have shown that

potentized HgCl2 cannot ‘mimic’ the biochemical properties of original compound, a logical and scientific explanation regarding the real molecular mechanism involved in potentization as well as therapeutic action becomes very much necessary.

Only possibility is ‘molecular imprinting’, as proposed by MIT.

Now, we have to repeat these in vitro experiment to verify whether higher potencies of HgCl2 can reactivate the enzymes already inhibited by lower potencies or crude forms of the same compound.

Even though the reported experiment was not intended or designed to prove MIT concepts, it indirectly contributes in proving it

2. Experimental evidences that prove potentized drugs can reverse the biological effects of MOLECULAR FORMS of same drugs- a strong validation of MIT concepts:

Can MOLECULAR IMPRINTS contained in potentized drugs antidote or REVERSE the biological effects of DRUG MOLECULES in the crude forms of same drugs?

This question is of paramount importance when trying to prove the concepts of 'molecular imprints' proposed by MIT as part of scientific explanation for the molecular mechanism of homeopathic potentization and therapeutics.

Most homeopaths maintain that medicinal properties of crude drugs are transferred to the medium during potentization. They may call it ‘vibrations’, ‘electromagnetic signals’, ‘medicinal memory’, ‘dynamic power’ or anything like that. But all those theories are based on the concept that potentized medicines can ‘mimic’ the MEDICINAL properties of parent drugs. They think potentized drugs act SIMILAR to crude drugs.If potentized medicines were really ‘mimicking’ the medicinal properties of parent drugs, they should be able to produce similar biological effects. But it is seen from the many in vitro experiments that potentized medicines could not act the SAME way as parent drugs on biological molecules. Whereas the molecular forms of HgCl2 inhibited the sugar hydrolases, potentized HgCl2 was not able to produce such a result.

Next question we have to answer is, whether potentized medicines can ANTIDOTE the biological effects of parent drugs. According to the hypothesis put forward by MIT,

potentized medicines contains ‘molecular imprints’ of constituent molecules of parent drugs. As such, these molecular imprints can act as artificial recognition sites for parent molecules, and bind to them, thereby preventing them from interacting with biological targets.

If this concept of ‘molecular imprint’ is correct, potentized medicines should be capable of antidoting or reversing of biological effects of their parent molecules. If we prove this point, it would be a big step in favor of ‘molecular imprinting’ concept put forward by MIT.

Here I am reproducing a report regarding such a successful experiment published in 2001. This historic experiment was conducted by a team consisting of Swapna S Datta, Palash P Mallick and Anisur AR Rahman Khuda-Bukhsh of Cytogenetics Laboratory, Department of Zoology, University of Kalyani, Kalyani-741 235, West Bengal, India and published online on 23 November 2001. Report may be read at this link: http://www.springerlink.com/content/b2t71744t426j5n4/

They proved through strictly controlled experiments that potentized homeopathic drug, Cadmium Sulphoricum, could reduce the genotoxic effects produced by cadmium chloride in mice. They used potentized Cadmium Sulph because they could not get homeopathic potencies of Cadmium Chloride. Since Cadium Sulph and Cadmium Chlor contains Cadmium, and Cadmium is the real genotoxic factor, such an experimental protocol is acceptable.

Through these experiments, the team could prove that both Cad Sulph-30 and 200 were able to combat cadmium induced genotoxic effects in mice. From the results of the reported investigation it is revealed that both Cad Sulph-30 and Cad Sulph-200 showed remarkable potential to reduce genotoxic effects produced by CdCl2. In the study the homeopathic drug apparently enhanced/activated the process of maintaining the structural integrity of chromosomes and sperm either protecting them from the destructive ability of CdCl2 in causing DNA damage or else, by enhancing the process of repair of DNA already damaged by activating specific enzyme systems to repair the damage. Even in the absence of a single original drug molecule both Cad Sulph-30 and 200 elicited spectacular ability of protection/repair to damaged chromosomes and sperm, a fact which would lead one to speculate that the drugs must have acted through the genetic regulatory mechanisms.

We have another relevant study conducted by a team consisting of Philippe Belon, Pathikrit Banerjee, Sandipan Chaki Choudhury, Antara Banerjee,Surjyo Jyoti Biswas, Susanta Roy Karmakar, Surajit Pathak, Bibhas Guha, Sagar Chatterjee, Nandini Bhattacharjee, Jayanta Kumar Das, and Anisur Rahman Khuda-Bukhsh of Boiron Lab, 20 rue de la Libėration, Sainte-Foy-Lės-Lyon, France, and Department of Zoology, University of Kalyani, Kalyani-741235, West Bengal, India , published on December 26, 2005. Complete report is available at this link: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1375236/

This team undertook a study to find out whether administration of potentized homeopathic remedy, Arsenicum Album, alter Antinuclear Antibody (ANA) Titer in people living in high-risk arsenic contaminated areas.

To examine whether elevated antinuclear antibody (ANA) titers reported in random human population of arsenic contaminated villages can be reverted to the normal range by administration of a potentized homeopathic drug, Arsenicum album, randomly selected volunteers in two arsenic contaminated villages and one arsenic-free village in West Bengal (India) were periodically tested for their ANA titer as well as various blood parameters in two types of experiments: ‘placebo-controlled double blind’ experiment for shorter duration and ‘uncontrolled verum fed experiment’ for longer duration. Positive modulation of ANA titer was observed along with changes in certain relevant hematological parameters, namely total count of red blood cells and white blood cells, packed cell volume, hemoglobin content, erythrocyte sedimentation rate and blood sugar level, mostly within 2 months of drug administration.

Thus, potentized Arsenicum album was proved to have great potential for ameliorating arsenic induced elevated ANA titer and other hematological toxicities.

Both these controlled scientific studies have proved beyond doubt that potentized homeopathic medicines can ANTIDOTE or reverse the biological effects of parent drugs.

In the absence of original drug molecules, how could the homeopathic potencies exhibit such an action? The theory that potentized medicines ‘mimic’ the parent drugs is obviously disproved through these experiments. Only logical explanation we can provide for this phenomenon is the ‘molecular imprints’ of parent drug molecules being the active principles of potentized medicines. ‘Molecular imprints’ can specifically bind to

their parent molecules, and thereby antidote or reverse the biological properties of parent molecules.

INDIRECTLY, THESE STUDIES STRONGLY SUPPORT IN PROVING THE "MOLECULAR IMPRINTING" HYPOTHESIS PROPOSED BY MIT REGARDING MOLECULAR MECHANISM OF POTENTIZATION AND HOMEOPATHIC THERAPEUTICS.

3. A scientific study that endorses the concept of MOLECULAR IMPRINTING involved in homeopathic potentization:

Explanations of potentization in terms of molecular imprinting implies a supra-molecular rearrangement of potentizing medium, resulting in the formation of nanostrutures called as molecular imprints. Obviously, any study that indicates such a supra-molecular rearrangement could be considered as an evidence toendorse MIT concepts.

Tanmoy Maity Department of Electrical Engineering,Indian School of Mines, Dhanbad, Jharkhand 826004,India), D. Ghosh & C.R. Mahata (Department of Electrical Engineering, Bengal Engineering and Science University, Shibpur, Howrah 711103, West Bengal, India) has published a research paper regarding Effect of dielectric dispersion on potentised homeopathic medicines, which I think is of immense implications in our understanding of active principles of our drugs as ‘molecular imprints’ or ‘hydrosomes’.

This report is available
on http://www.sciencedirect.com/science/article/pii/S1475491609001258

This paper reports dielectric dispersion occurring inpotentised homeopathic medicines subjected to variable frequency electric field using an instrumentation method developed by the authors. Oscillations occur in thedirection of electric field, and are usually termedlongitudinal/acoustic-mode vibrations.

The test material was lactose soaked with homeopathic medicine. Multiple resonance frequencies, forming afrequency-set, were observed repeatedly for each medicine.

The team reports experimental results for three potencies of Cuprum metallicum (Cuprum met) in the frequency range of 100 kHz–1 MHz. Each exhibits a set of

resonance frequencies, which may be termed as its characteristic set. As the frequency-set of each medicineis different from those of others, each medicine may, therefore, be identified by its characteristic frequency-set. This suggests that potentised homeopathic medicines, which are chemically identical with the vehicle, differ from one another in the arrangement of vehicle molecules. According to them, these “experiments show that potentised homeopathic medicines, which are chemically identical with the vehicle, differ from one another in the arrangement of vehicle molecules”.

“Difference in arrangement of vehicle molecules” strongly indicates the presence of “supra-molecular clusters of water and ethyl alcohol, into which the three-dimensional configuration of drug molecules are imprinted as nanocavities” as proposed by the hypotheses proposed by MIT.

The observation that “the resonance frequencies frequency-set of each medicine is different from those of others” strongly indicates clusters of water-ethyl alcohol molecules specifically rearranged in accordance with the shapes of constituent molecules of drug substance used for potentization.

Such a re-arrangement of vehicle molecules strongly indicates the process of ‘molecular imprinting’ happening during homeopathic potentization. Present work is a decisive step in the scientific understanding of homeopathy.

4. An important IN VITRO research work that disproves the role of 'vital force' in homeopathy, and supports the ideas proposed by MIT regarding the biological mechanism of high dilution therapeutics:

The MODEL proposed by MIT regarding biological mechanism of homeopathic drug action does not consider VITAL FORCE as a factor, which totally disagree with the models most homeopaths propagate. MIT considers therapeutics as a MOLECULAR level process, and explains ‘similia similibus curentur’ in terms of modern biochemistry.

According to ‘classical homeopathy, disease and cure takes place only at the level of ‘vital force’, which is an ‘immaterial’, ‘spirit like’ force animating the living organism. According to this theory, potentized drugs should act only up on the living organism as a whole, animated by ‘vital force’ and having ‘mind’ and ‘nerve tissue’.

If this vitalistic model of homeopathy is right, potentized drug should ACT only on LIVING ORGANISMS, having mind and nervous tissue. Any evidence that proves potentized drug can act on CHEMICAL MOLECULES devoid of nerve cells, mind and vital force, will inevitably prove this ‘vital force’ theory wrong.

We have a RESEARCH report that clearly PROVES that potentized drugs act on biological molecules through a mechanism similar to the action of modern drugs. That means, we have to explain the dynamics of homeopathic therapeutics in accordance with the principles of modern biochemistry and molecular medicine. This report ratifies the model proposed by MIT.

This study also proved that potentized homeopathic drugs have cannot produce any BAD EFFECTS upon healthy cells, which disproves the theory that homeopathic drugs used without indications may harm the organism. MIT always maintains that molecular imprints cannot PRODUCE molecular inhibitions, but only REMOVE molecular inhibitions.

I am referring to a recent study published in the February2010 issue of the International Journal of Oncology has documented that homeopathic remedies applied to breast cancer cells caused significant cell death, while resulting in nearly indiscernible harm to normal breast cells. The study, done by the respected MD Anderson Cancer Center, was entitled, ‘Cytotoxic effects of ultra-dilutedremedies on breast cancer cells’. (“Cytotoxic effects ofultra-diluted remedies on breast cancer cells”; Frenkel etal, International .Journal of Oncology, 36: 395-403, 2010)

Report says:

“This reported study was done same way as any new chemotherapeutic drugs are tested. The researchers proved that homeopathic remedies have similar effects to chemotherapy on breast cancer cells but without affecting normal cells. This is the first study that evaluated the effect of homeopathic remedies on breast cancer cells using same methodology used for chemotherapeutic drugs”.

“Modern automated equipment was used to test the effects of four homeopathic remedies on two adenocarcinoma cell lines. Controls of normal breast cells and cells treated only with solvent were done”.“Cell lines were cultured and treated with solvent

orsolvent with one of four remedies added: Carcinosin 30C,Conium maculatum 3C, Phytolacca decandra 200C, andThuja occidentalis 30C".

"The results were remarkable. The viability of cells treated only with solvent were inhibited, on average, by20-30% in the three cell lines, to a maximum of 35% at the longest exposures. All four remedies further inhibited viability in the two breast cancer cell lines, but did not show a significant reduction in the normal cell lines. The amount varied by cell line, remedy, concentration of remedy, and time. One of the cancer cell lines was less viable in the face of homeopathic remedies than the other."

"The two most effective remedies on these cell lines were Carcinosin and Phytolacca. At 5µl/ml, they reduced viability in one cancer cell line at 48 & 72 hours by50-65%, and at 10µl/ml, viability was reduced by65-70%. In the other cancer cell line at the same times,5µl/ml concentrations reduced viability by 60-75% and at10µl/mo, viability was reduced by 70-80%. The maximum viability reduction by solvent alone in the two cancer cell lines was 30-35%."

"The effects of all the remedies on the normal cell linewere nearly indistinguishable from the solvent's effect, which showed potentized drugs has no action upon normal cells."

Let us examine the implications of this scientific study on homeopathic theory and practice from a different angle. In my opinion, this scientific study has following implications upon homeopathy:

First of all, this study proved the efficacy of potentized homeopathic drugs on cultured samples of cancer cells, thereby providing a fitting answer to the distracters of homeopathy who argue that potentized drugs have only placebo effect.

This study done by Frenkel and his team provides compelling evidence that homeopathic remedies have an impact on living cells, and may indicate an ability to distinguish between healthy and diseased tissues. It doesn't demonstrate how homeopathic remedies work, though it does provide some evidence for cellular changes they produce in some cancerous cells.

At the very least, Frenkel's team has shown that homeopathy and its remedies work without any role of 'placebo effect' as some people wrongly allege. Nobody can say 'placebo' can work on biological molecules outside the organism.

Secondly, even though my inference may not be acceptable to ‘classical homeopaths’, this study scientifically disproves the homeopathic theory regarding mode of action of potentized drugs, and role of ‘vital force’ in the action of potentized drugs.

Most homeopaths maintain that the ‘dynamic medicinal energy’ of potentized drugs act upon the organism through ‘nerve signals’, which is proved incorrect through this study, since ‘cancer cell cultures’ used for here do not contain nerve cells.

According to ‘classical homeopaths’, ‘dynamic drug energy’ acts up on ‘vital force’, which cures the disease first at ‘mental level’. It is believed that the ‘mind’ in turn cures the disease in the ‘physical body’. There is no ‘mind’ or ‘vital force’ present in cell cultures, and as such, this study totally disproves the whole theory of ‘vital force’ in the homeopathic drug action.

According to ‘classical homeopathy, disease and cure takes place only at the level of ‘vital force’, which is an ‘immaterial’, ‘spirit like’ force animating the living organism. According to this theory, potentized drugs should act only up on the living organism as a whole, animated by ‘vital force’ and having ‘mind’ and ‘nerve tissue’.

The present study is not conducted on living individuals, but in vitro cell cultures, same way as modern chemotherapeutic drugs are tested. Cell cultures do not contain nerve cells, mind or vital force, which totally disproves the theory of vital force, nerves and mind as factors in homeopathic therapeutic process

Thirdly, this study has documented that homeopathic remedies applied to breast cancer cells caused significant cell death, while resulting in no harm to normal breast cells. That shows potentized homeopathic drugs have no action upon healthy cells, which disproves the theory that homeopathic drugs used without indications may harm the organism.

Lastly, since this in vitro study was conducted in the same way as modern chemotherapeutic drugs, it clearly proves that potentized drugs act on biological molecules through a mechanism similar to the action of modern drugs. That means, we have to explain the dynamics of homeopathic therapeutics in accordance with the principles of modern biochemistry and molecular medicine.

I think this study is a decisive step in PROVING the biological model of homeopathic drug actions proposed by MIT, and the over all the scientific understanding of homeopathy.

5. A remarkable RESEARCH work that supports the concept of MIT:

One of the questions listed to be proved as part of scientific verification of MIT concepts was, whether potentized drugs, devoid of any original drug molecules, differ from untreated diluent medium in its molecular level structure. If MIT is right, they should differ, since 'molecular imprinting' is envisaged as formation of hydrogen-bonded supra-molecular nano-structures ofwater-ethyl alcohol molecules.

An elaborate study conducted by a research group, even though without any idea of molecular imprinting involved in potentization, rightly observes that the homeopathic potencies and their original diluent medium differ from each other with respect to the number of H-bonded water species and their H-bonding strengths. I think this study contributes much in proving MIT concepts right.

Even though the authors could not understand the real process of "MOLECULAR IMPRINTING" involved in the phenomenon, their observation amply proves that the supra-molecular structure of potentized medicines differs from ethyl alcohol/water mixture, even though their chemical composition remained the same. That means, through the process of potentization, supra-molecular structure of ethyl alcohol/water mixture has undergone fundamental changes. Obviously, it is through thesestructural changes that the medicinal properties of drug molecules are transferred to the diluent medium.

This difference in the structure of potentized medicines from their original medium, the specificity of medicinal properties exhibited by potentized medicines, and the fact that potentized medicines exhibit medicinal properties just opposite to that of parent drugs can be satisfactorily explained only on the basis of "molecular imprinting' as proposed by MIT.

This remarkable study regarding the variation in FourierTransform Infrared Spectra of some homeopathic potencies and their diluent media, conducted byN.C.SUKUL, Ph.D., SUDESHNA GHOSH, M.Sc., A.SUKUL, Ph.D., and S.P. SINHABABU, Ph.D. It ispublished in THE JOURNAL OF ALTERNATIVE ANDCOMPLEMENTARY

MEDICINE, Volume 11, Number 5,2005, pp. 807–812. The report is available at this link:http://www.homeopathy.org/research/basic/acm-2005-11_11.pdf

Published report reads as follows: “The aim of this study was to determine whether potentized homeopathic drugs and their diluent media differ from each other with respect to their Fourier transform infrared (FTIR) spectra. FTIR spectra of Nux vomica 30C, Lycopodium 30C, Santonin 30C, Cina 30C, Cina 206C, Cina 1006C, and their diluent media (90% ethanol and Ethanol) 30C were obtained in the wave number range of 2000–1000 cm_1at 20°C. Potassium bromide powder soaked with the potencies, pressed into pellets, and air dried were used to measure the spectra. Because water structures in homeopathic potencies are thought to carry specific information on drug molecules and because O-H bendingvibrational band (v2) exclusively belongs to water, the study was restricted to the bands in that wave numberregion. Alcohol has no absorption in the O-H binding region.

The potencies were found to differ from each other and their diluent media in the number of v2 bands, their wavenumber (cm_1), shape, and half-width (cm_1) of the bands.

The number and other characteristics of the v2 band represent the number of hydrogen-bonded water species and their hydrogen-bonding strength, respectively. The potencies and their diluent media therefore differ frome ach other in the number of hydrogen-bonded water species and their hydrogen-bonding strength. The observation that KBr pellets soaked with a potentized drug retains its specific spectral absorption properties simply confirms that medicated sucrose globules, used in homeopathic dispensing, are capable of retaining the therapeutic properties of the drug.

Drugs are prepared and stored in aqueous ethanol. Sucrose globules soaked with liquid potencies retain therapeutic properties of the drugs for a long time. Water also serves as a good medium but it does not keep the properties of a potency for long. It has been suggested that water structures in a potentized drug are responsible for carrying the information of drug molecules or particles present in the mother tincture. Ethanol molecules are thought to promote or to preserve water structures characteristic of a potentized drug.1A basic quality of a hydrogen-bonded solvent such as water is the hydrogen bond strength.

Physicochemical properties of the water in aqueous alcohol mixtures have been studied widely by such techniques as X-ray or light scattering, dielectric relaxation, nuclear magnetic resonance imaging et cetera.

Among these methods, infrared (IR) spectroscopy is oneof the most promising for the study of the distribution of hydrogen- bonding strengths of the water molecules in the mixtures because of the short time scale of measurements. There are two kinds of fundamental vibrations for molecules: (1) stretching, in which thedistance between two atoms increase or decrease but the atom remains in the same bond axis; and (2) bending, in which the position of the atom changes relative to the original bond axis. Infrared radiation causes vibrational excitation of the molecular framework of a compound. Inaqueous alcohol O-H stretching vibrational bands of water(v1 and v3) overlap the alcoholic O-H band. For this theIR spectra in the stretching region are of no use for studying hydrogen bonds of the water molecules in water/alcohol mixtures. In the region of bending vibrational band of water (v2), alcohols have no absorption bands. The purpose of the present work is to study v2 bands through Fourier transform infrared (FTIR) spectroscopy in 90%ethanol, Ethanol 30C, and some potentized drugs such as Nuxvomica 30C, Lycopodium 30C, Santonin 30C, Cina 30C,Cina 206C, and Cina 1006C prepared in 90% ethanol. Conventionally vibrations are labeled in decreasing frequency within their symmetry type. The symmetric vibrations of H2O are labeled v1 for the highest fully symmetric frequency (3651.7 cm_1) and v2 for the nexthighest (1595.0 cm_1).7 FTIR spectroscopy provides simultaneous and almost instantaneous recording of the whole spectrum in the infrared region while minimizing background noise.

Nux vomica 30C, Lycopodium 30C, Santonin 30C,and Cina 30C were prepared by successive dilution(1:100 v/v) with 90% ethanol followed by succussion in30 steps from the respective mother tinctures in thislaboratory.8 Cina 200C and Cina 1000C, purchased fromM. Bhattacharyya and Co. (Calcutta, India), were further diluted (1:100) and succussed with 90% ethanol in 6more steps to prepare Cina206C and Cina 1006C. All of these potencies have the same absorbance (3.135) at 255nm, showing similar concentrations of ethanol (90%). The purpose was to replace the manufacturer’s aqueous ethanol in Cina 200C and Cina 1000C with the ethanol in this laboratory so that the diluent medium (90% ethanol)of all the test potencies would be of the same quality.Ethanol was obtained from Bengal Chemical and Pharmaceuticals Ltd. (Calcutta, India). Sterile deionized and double-distilled water was added to absolute ethanolto

prepare 90% ethanol, which served as the diluents medium of all potenties as well as the control.

FTIR spectra were measured at 20°C by a Jasco FTIR spectrometer (Jasco, model 420, Japan). The wave number resolution was 4 cm_1. Spectra were obtained inthe wave number range of 2000–1000 cm_1. Potassium bromide powder (_150 mg) was soaked with 90% ethanol(_0.15 mL) or any of the six potencies tested. The drug-soaked powder was mixed thoroughly with a mortar and pestle, spread in thin film (1 mm deep) in a petri dish,and allowed to dry at 30°C (50% humidity). The powder was then pressed into small equal-sized pellets. The KBr pellets, which simulate sucrose globules soaked with a potency, were exposed to IR radiation in the spectrometer. Five pellets were prepared for each drug orthe diluent medium, and the IR spectra measured.

Data were analyzed by one way analysis of variance. Different potencies and their diluent media (90%ethanol, Ethanol 30C) differ significantly (p _ 0.01) fromeach other with respect to the positions of bands in the wave number regions, their half-widths, and their absorption intensities except the wave numbers. ……..Because all KBr pellets were prepared under similar conditions, it is quite unlikely that they have different amounts of water in them. In earlier work the present authors observed a marked variation in O-H bending vibration among 90% ethanol, Nux vom 30C (unsuccussed), and Nux vom 30C succussed. 5 The results of the present study show that potentized drugs differ from each other and also from their diluent medium,90% ethanol, in the number of v2 bands. The number of observed v2 bands should provide the number of water species with different hydrogen-bonding strengths.6 Theremay be a few more water species than those actually observed by v2 bands in the spectra. According to Mizuno (personal communication, June 2003), IR spectroscopy has superior power in that different water species are distinctive from each other, but it is very difficult to resolve the curve into components. Mizuno further observed that there was no linearity in the absorption intensities of different bands. Thus different potentized drugs have different water species with different hydrogen-bonding strengths. The v2 bands have different half-widths in different potencies. The broadening of v2 bands has been attributed to the distribution of hydrogen-bonding strengths and vibrational coupling. 6The v2 band of pure water has an unusually broad width of 82 cm_1 at half-maximum. The v2 band is found to be narrower with an increase in the alcohol concentration. The narrowing of the v2 band is considered to be caused by the weakening of the vibrational coupling as a result of dilution by the alcohol. The concentration of ethanol was the

same (90%) in all the potencies tested. The variation in the half-width of the v2 band may thus be caused by influence of original molecules at the start of the dilution process and also by succussion. Previously the present authors observed that succussion caused blue shift of the v2 in Nux vomica 30C.In each column of Table 1 the band of different drugs showed either a blue or red shift. Blue shifts represent the formation of stronger hydrogen bonds among water molecules. This has also been confirmed by1H-NMR studies. It has long been known in clinical practice that sucrose globules soaked with a liquid potentized drug retain all the therapeutic properties of the drugs. FTIR spectra of KBr pellets soaked with potentized drugs simply confirm the long-standing clinical observation.

Cowan et al. demonstrated that the three-dimensional structure of liquid water loses its memory of molecular arrangement through the H-bond network in about 50 fs. The work was based on O-H stretching vibrations of pureH2O. Pure water is not comparable to a homeopathic potency that is prepared by successive dilution and succession from a mother tincture and preserved in 90% ethanol. Ethanol molecules with large nonpolar parts can preserve or promote water structures specific to a homeopathic potency. The efficacy of a homeopathic potency prepared in pure water is very short-lived. An electrostatic component is usually the dominant force contributing to H-bonding. Succussion or any mechanical agitation would therefore make the H-bonding strong er in a homeopathic potency. In ethanol solution the sequential H-bond dissociation and reassociation occur between the same OH groups. In water the broken bonds probably reform to give the same H-bond. Dissociation is a rare event occurring only twice a day, that is, once for every 1016 times the H-bond breaks. Thus clusters can persist for much longer times. The relative proportions of different polymers of water preserved by ethanol are at dynamic equilibria of specific geometric configurations. It is assumed that this dynamic geometric configuration of water clusters in a collective way confers specificity on a potentized homeopathic drug. The homeopathic potencies used in the present study were prepared in 90% ethanol and soaked in KBr pellets. Here water structures were preserved by ethanol and their random.

Based on the study findings several conclusions can be drawn. First, in the FTIR spectra of aqueous alcohol mixtures O-H bending vibrational bands (v2) exclusively belong to water. Nux vomica 30C, Lycopodium 30C,Santonin 30C, Cina 30C, Cina 206C, and Cina 1006C differ from each other and also from their diluent medium,90%

ethanol, in the number of v2 bands, their wave-number (cm_1), their shape, and half-width (cm_1) in the FTIR spectra.

6. ‘Thermo-Luminance Studies Of Ultra-high Dilutions' Provides Proof For 'Molecular Imprinting'

“Potentized medicines contain supra-molecular clusters of water/ethyl alcohol, different from control medium, which will be evident from spectroscopic studies.”

This was one of my predictions proposed to be verified, as part of proving the concept of ‘molecular imprinting’ according to scientific methods.

I think the remarkable work discussed below, done by Louis Rey on thermo-luminescence of ultra-high dilutions of lithium chloride and sodium chloride, and published in December 2002, provides crucial support as a very strong proof for this very important prediction.

As per the reported work, ultra-high dilutions of lithium chloride and sodium chloride (10−30g cm−3) have been irradiated by X- and gamma rays at 77 K, then progressively re-warmed to room temperature. During that phase, their thermo-luminescence has been studied and it was found that, despite their dilution beyond the Avogadro number, the emitted light was specific of the original salts dissolved initially.

This wonderful observation that high dilutions of salts very much above avogadro number retains the specific thermo-luminance patterns reminding of of original salts seems to be very crucial. This phenomenon could be well explained only in terms of supramolecular nanostructures of water carrying the imprints of exact ‘conformations’ of ‘individual’ molecules of salts, as explained by MIT concepts.

Thermo-luminance studies have been developed and utilized so far as a "tool to study the structure of solids, mainly ordered crystals". In the present study, the researchers successfully utilized it in ultra-high aqueous dilutions, which demonstrates the short range 'crystalline' character of water as well as high dilution preparations.

Actually, the researchers took up this work to 'challenge' the 'water memory' theory, but proved it otherwise. They confess in their report: "we thought that it would be of interest to challenge the theory according which preexistent ‘structures’ in the original liquid,

developed around some added chemicals, could survive a great number of successive dilutions when done under vigorous mechanical stirring".

Another important point to be noted is that the researchers did not use 'commercial samples' as most ‘researches’ do, but prepared themselves 15c dilutions of lithium chloride and sodium chloride under the guidance of boiron labs. This fact provides more scientific credence to this study.

The study "showed quite clearly that the initial addition of a solute (NaCl and LiCl) in the original D2O leaves a permanent effect even when, by successive dilutions made under strong vibration, all traces of solute have disappeared." The results were reproduced in several repeated experiments, "beyond any ambiguity".

It should be specifically pointed out, researchers had no any idea of Molecular Imprinting. They propose the following hypothesis for explaining their observation:

"As a working hypothesis, we propose that this phenomenon results from a marked structural change in the hydrogen bond network initiated at the onset by the presence of the dissolved ions and maintained in the course of the dilution process, probably thanks to the successive vigorous mechanical stirrings."

See, this hypothesis comes very close to the concept of Molecular Imprinting!

Thermally stimulated luminescence—often called thermo-luminescence—is a well known phenomenon amongst the thermally stimulated processes (thermally stimulated conductivity—thermally stimulated electron emission—thermogravimetry—differential thermal analysis and differential scanning calorimetry, etc.). Its theory and applications have been fully developed inter alia by McKeever, Chen and Visocekas and it proved to be a most interesting tool to study the structure of solids, mainly ordered crystals. To that end, the studied material is “activated” at low-temperature, usually by radiant energy (UV, X-rays, gamma rays, electron beams, or neutrons) which most generally creates electrons–holes pairs which become separately “trapped” at different energy levels. Then, when the irradiated material is warmed up, the heating serves as a trigger to release the initially accumulated energy and the trapped electrons and holes move and recombine. A characteristic glow is emitted most often under the shape of different successive peaks according to the depths of the initial traps. As a general rule this phenomenon is observed in ordered crystals though it can be equally seen in

disordered materials such as glasses. In that mechanism, imperfections in the lattice play a major role and are considered to be the place where luminescent centres appear. Thus, thermoluminescence is a good tool to study these imperfections and understand how they appear in the crystal.

This is exactly along those lines that the researchers carried our first investigations, starting, this time, from liquids which were turned into stable solids by low-temperature cooling.

Working essentially with water—mainly deuterium oxide—they have shown that the thermoluminescent glow of irradiated hexagonal ice consisted in two major peak areas—Peak 1 near 120 K and Peak 2 near 166 K having well-defined emission spectra the D2O samples giving a much higher signal than the H2O ones.

In both cases, un-irradiated samples gave no signals whatsoever. For both D2O and H2O it was shown that the relative intensity of the thermoluminescence glow was a function of the irradiation dose and, that at least for Peak 2, it did show a maximum between 1 and 10 kGy .

As a first hypothesis on the nature of the emission itself it has been suggested by Teixeira that Peak 2 could be connected to the hydrogen-bond network within the ice which, in turn, could result from the structure of the original liquid sample, whilst Peak 1 looked to be closely related to the molecule. This strengthens the views on the involvement of hydrogen bonds in this mechanism.

To develop this concept further, the researchers did select to study the effect of lithium chloride on the thermoluminescence of irradiated D2O ice since this particular substance is known to suppress hydrogen bonds. The result, indeed, is spectacular and, at the relatively low concentration of 0:1M, Peak 2 is totally erased whereas the basic emission of Peak 1 remains almost unchanged.

At that point the researchers thought that it would be of interest to challenge the theory according which pre-existent “structures” in the original liquid, developed around some added chemicals, could survive a great number of successive dilutions when done under vigorous mechanical stirring.

To that end they prepared, courtesy of the BOIRON LABORATORIES, ultra-high dilutions of lithium chloride and sodium chloride by successive dilutions to the hundredths, all done under vigorous mechanical stirring (initially 1 g in 100 cm3, then 1 cm3 of this solution in 99 cm3 of pure D2O ... and so on) until they reached—theoretically—at the 15th dilution, a “concentration” of10−30 g cm−3. A reference sample of D2O alone was also prepared according to this technique, still keeping vigorous agitation (150 strokes=7:5 s at each successive “dilution” step).

They did proceed, then, to the “activation” of these materials by irradiation according the following experimental protocol.

One cubic centimeter of each solution is placed in aluminium test cavities of 20 mm diameter and 2 mm depth and frozen to −20◦C on a cold metallic block. The frozen systems are kept 24 h at −20◦C to achieve stability into their crystallization patternand they are immersed into liquid nitrogen and kept at −196◦C for 24 h.

In a first set of experiments the frozen ice disks are irradiated at 77 K with 100 kV X-rays to achieve a dose of 0:4 kGy (30 min). Previous determinations were done to check that the disks having identical positions in the field did receive the same dose (dosimetry has been done using Harwell, FWT, and alanine dosimeters).

After irradiation, all the “activated” samples are transferred into a liquid nitrogen container and kept, there, for a week-time, to even out whatever small differences could exist between them.

Finally, all samples are placed in the thermoluminescence equipment and their respective glow recorded—with both a photo-multiplier and a CCD camera connected to a spectrograph—in the course of rewarming (3=min) between 77 and 13 K, as has been done in our previous published experiments.

Much to their surprise, the experimental results do show—without any ambiguity— that for an X-ray dose of 0:4 kGy the thermoluminescence glows of the three systems were substantially different . These findings did prove to be reproducible in the course of many different identical experiments.

To compare the curves between them the researchers normalized the emitted light readings taking Peak 1 as the reference. In doing so, we obtain for Peak 2 the different

curves presented which show quite clearly that the initial addition of a solute (NaCl and LiCl) in the original D2O leaves a permanent effect even when, by successive dilutions made under strong vibration, all traces of solute have disappeared. More remarkable were the fact that, by far, lithium chloride demonstrates a stronger hydrogen bond suppressing “ghost” effect which could be related to the larger size of the lithium ion.

A second set of experiments done with gamma rays (courtesy of CELESTIN Reactor, COGEMA, Marcoule), at a higher dose (19 kGy) did confirm these findings

It appears, therefore, that the structural state of a solution made in D2O can be modified by the addition of selected solutes like LiCl and NaCl. This modification remains even when the initial molecules have disappeared and the effect is the same at different irradiation doses (0.4 –19 kGy) and for different radiant sources (X-rays, gamma rays). As a working hypothesis, the researchers propose that this phenomenon results from a marked structural change in the hydrogen bond network initiated at the onset by the presence of the dissolved ions and maintained in the course of the dilution process, probably thanks to the successive vigorous mechanical stirrings.

Researchers had no any idea of Molecular Imprinting. They proposes the following hypothesis for explaining their observation:

"As a working hypothesis, we propose that this phenomenon results from a marked structural change in the hydrogen bond network initiated at the onset by the presence of the dissolved ions and maintained in the course of the dilution process, probably thanks to the successive vigorous mechanical stirrings."

See, this hypothesis comes very close to the concept of Molecular Imprinting!

If we fail to explain the observations of this monumental research in terms of Molecular Imprinting, there remains the danger that it will be hijacked by 'energy medicine' theoreticians, by interpreting in terms of 'essence of drugs', 'information', 'vibrations' and the like. Actually, Jan Scholten has already done that exercise, by saying 'information' of drugs imprinted in water are the cause of thermoluminence observed by the researchers. Then he very cleverly fits this thermoluminence into his energy medicine frame work of 'bioluminence', vibrations, vital force, resonance and other pseudoscientific theories.

To be specific, precise and fitting to modern scientific knowledge system and its accepted paradigms, it is better to say ‘molecular imprints’ of original drug molecules are the cause of similarity of thermoluminence the researchers could observe. Such an explanation will clearly demonstrate that we are talking about the ‘complementary’ shape of drug molecules imprinted into nanostructures of water, which produce therapeutic effects by acting as ‘artificial binding sites’ for pathogenic molecules.

(Read this report in its full form
at http://www.janscholten.com/janscholten/Evidence_files/Rey.thermoluminescence.pdf
E-mail address: louis.rey@bluewin.ch (L. Rey)

7. I Feel Really Sorry For Wrong Interpretations Of This Great Research Work On Homeopathy:

Here is is an excellent work, even though I do not agree with their interpretations and conclusions. Had it been interpreted correctly, this work would have contributed a lot in the MIT concepts. I feel really sorry for wrong interpretations of this great research work on homeopathy.

I could locate this very important research work ”Homeopathy emerging as nanomedicine” by Rajendra Prakash Upadhyay (Department of Bio-chemical Engineering and Biotechnology, Indian Institute of Technology (IIT) Delhi, New Delhi, Indi a), Chaturbhuja Nayak (Central Council for Research in Homeopathy, New Delhi, India) Published in Int J High Dilution Res 2011; 10(37): 299-310. *Read the full text of original article on this*
link: http://www.feg.unesp.br/~ojs/index.php/ijhdr/article/view/525/551

I am quoting the ABSTRACT of their work here:
_____

ABSTRACT

Background: Homeopathy is a time-tested two-century old empirical system of healing. Homeopathic medicines are prepared through a characteristic process known as potentization, where serial dilutions are performed with strong strokes at each step of dilution. Homeopathy is controversial because most medicines do not contain one single molecule of the corresponding starting-substance.

Aim: To investigate a possible nanoscience mechanism of action of homeopathic medicines.

Methodology: Ultra-pure samples were prepared and were examined under scanning (SEM) and transmission electron microscope (TEM) along with selected area nanodiffraction (SAD) and energy-dispersive X-ray analysis (EDX). Also trace element analysis (TEA) for silicon was performed.
Results: Homeopathic medicines showed not to be „nothing", but exhibited nanoparticles and conglomerates of them, which had crystalline nature and were rich in silicon.

Conclusions: During the violent strokes involved in potentization, information arising from the serially diluted starting-substance might be encrypted by epitaxy on silicon-rich crystalline nanoparticles present in the resulting homeopathic medicine. The „size" of the information encrypted on nanoparticles might vary together with the degree of dilution. As homeopathic medicines exhibit healing effects, these nanoparticles along with the interfacial water on their surface might carry this information – which biological systems are able to identify – to the target. As various forms of silica are known to interact with proteins and cells of the immune system, homeopathy might represent a nanomedicine system. Possible confirmation, however, requires further research in materials and interfacial water.

It is an excellent work, even though I do not agree with their interpretations and conclusions. Had it been interpreted correctly, this work would have contributed a lot in the MIT concepts.

SEE THE FINAL DISCUSSIONS AND CONCLUSIONS OF research paper by Rajendra Prakash Upadhyay and Chaturbhuja Nayak:

"Discussions: The dose of homeopathic medicine a patient takes may contain few (or zero) molecules/atoms of the starting-substance, but this fact alone does not make homeopathic medicines a variety of nanomedicines [12]. Toumey [12] compared homeopathic to nanomedicines, and quoting the example of nanomedicine Aurimune®, argued that nanomedicines differ from homeopathic medicines. The major difference is the use of a known amount of medicine in case of nanomedicines compared to homeopathic medicines. In addition, gold nanoparticles in nanomedicine Aurimune® act as the carriers of the active agent to the target.

In the case of homeopathic medicines, crystalline silica (or silicon) nanoparticles (along with other trace elements leaching from the glass wall of the vial) with interfacial water on their surface may acquire the structural information of the starting-substance during the process of potentization. In medium and high potencies, which are commonly used in clinical practice, the presence of starting-source is likely to be zero but it is "immaterial". It may be argued that what matters here is the "size" of the possible encrypted information, perhaps with the electromagnetic signature of the starting-substance. Such "size" might derive from the dilution level of the homeopathic medicine, since homeopathic medicines in different potencies exhibit different effects and properties. Furthermore, silica (or silicon) nanoparticles might also act as carriers of information. Such nanocarriers might convey the information of the starting-substance – which biological systems are able to identify – to the target, which the starting-substance molecules in themselves are not able to reach. The target, however, is unlikely to be local because homeopathy is rated a holistic therapy assumed to work by means of the immune system. It is worth to remark that various forms of silica are known to interact with proteins and cells of the immune system [13].

As homeopathic medicines might have both the "size" of the information of the diluted away starting-substance and the carriers needed to convey this information – which biological systems are able to identify – to the target, they may qualify as nanomedicines. Consequently, the nature, composition and surface features of the crystalline material (along with interfacial water) present in homeopathic medicines compared to controls have paramount importance. These must be further investigated, while keeping an eye also on possible electromagnetic emission. This investigation requires suitable developments in the fields of materials and interfacial water.

Conclusions: Three homeopathic medicines very frequently used in clinical practice were found not to be "nothing", but exhibited high nanoparticle contents. Such nanoparticles were rich in silicon and had crystalline nature. During the strong strokes of potentization, the nanoparticles might acquire the information of the diluted away starting-source encrypted on them by means of epitaxy. As various forms of silica are known to interact with proteins and cells of the immune system, these nanoparticles (along with the interfacial water on their surface) might also act as carriers of this information to the target. The "size" of information might be related with the dilution degree of medicines. Under such possible conditions, homeopathy qualifies as a

nanomedicine system not requiring high technology. For confirmation and further elaboration purposes, new research in materials and interfacial water are required”

The authors say : “In the case of homeopathic medicines, crystalline silica (or silicon) nanoparticles (along with other trace elements leaching from the glass wall of the vial) with interfacial water on their surface may acquire the structural information of the starting-substance during the process of potentization”. This is a very important observation. But they failed to explain this ‘acquiring’ of information in terms of molecular imprinting. Could they interpret this phenmenon using the concept of molecular imprinting, and explain how these molecular imprints act as artificial binding sites for pathogenic molecules, the picture would have been entirely different. Only ‘molecular imprinting’ can explain the biological mechanism of homeopathic cure in a way fitting to the paradigms of mdern biochemistry and ‘ligand-target’ interactions.

In the absence of idea of molecular imprinting, they try to utilize the concept of “possible encrypted information, perhaps with the electromagnetic signature of the starting-substance”, which could lead to hijacking of this valuable research work by energy medicine theorists who propagate pseudoscience. The statement “the target, however, is unlikely to be local because homeopathy is rated a holistic therapy assumed to work by means of the immune system” is pregnant with such possibilities. ‘Targets are unlikely to be local’, but ‘holistic’ is a statement that destroys the scientific credibility of this great work. Concept of ‘holistic target’ instead of ‘local’ or molecular targets is nothing but an attempt to satisfy ‘vital force’ theory. The statement “must be further investigated, while keeping an eye also on possible electromagnetic emission” is also a departure from genuine scientific interpretations of this research. Explaining mechanism of drug actions in terms of ‘electromagnetic emissions’ and ‘resonance’ is a subject very dear to ‘energy medicine’ homeopaths, but it contradicts existing scientific concepts regarding biological mechanism of cure.

The conclusion that “During the strong strokes of potentization, the nanoparticles might acquire the information of the diluted away starting-source encrypted on them by means of epitaxy” shows they have no slightest inclination of molecular imprinting.

Epitaxy actually refers to the deposition of a crystalline overlayer on a crystalline substrate, where the overlayer is in registry with the substrate. In other words, there must be one or more preferred orientations of the overlayer with respect to the substrate for this to be termed epitaxial growth. The overlayer is called an epitaxial film or epitaxial

layer. The term epitaxy comes from the Greek roots epi, meaning “above”, and taxis, meaning “in ordered manner”. It can be translated “to arrange upon”. For most technological applications, it is desired that the deposited material form a crystalline overlayer that has one well-defined orientation with respect to the substrate crystal structure.

By explaining potentization in terms of ‘epitaxy’ instead of ‘molecular imprinting’, the authors obviously misinterprets their scientific observations. In epitaxy, it is drug molecules that are carried- not ‘information” of drug molecules. Information can be carried in the absence of drug molecules only by molecular imprinting. Epitaxy is about carrying a layer of drug molecules -not information- on a carrier matrix, which cannot happen in high dilutions.

I request the authors to re-interpret their observations in the light of ‘molecular imprinting’, which would make their work a great historical milestone in the scientific understanding of homeopathy

8. Luc Montagnier's Works On 'Ultra-Dilutions' - Right Observations, Wrong Interpretations:

Luc Antoine Montagnier is a French virologist and joint recipient with Françoise Barré-Sinoussi and Harald zur Hausen of the 2008 Nobel Prize in Physiology or Medicine, for his discovery of the human immunodeficiency virus (HIV).

In 2009 he published a paper regarding detection of electromagnetic signals from bacterial DNA (M. pirum and E. coli) in water that had been prepared using agitation and high dilutions, and similar research on electromagnetic detection of HIV DNA in the blood of AIDS patients treated by anti-retroviral therapy. While homeopaths claim his research as support for homeopathy, many scientists have greeted it with scorn and harsh criticism. Because the research used high dilutions, homeopaths claimed it supported homeopathy, even though it didn't mention homeopathy or use ultra-high dilutions.

He was also questioned on his beliefs about homeopathy, to which he replied: "I can’t say that homeopathy is right in everything. What I can say now is that the high dilutions are right. High dilutions of something are not nothing. They are water structures which mimic the original molecules."

He did admit that he wasn't working with the very high dilution levels normally used in homeopathy: "We find that with DNA, we cannot work at the extremely high dilutions used in homeopathy; we cannot go further than a 10-18 dilution, or we lose the signal. But even at 10-18, you can calculate that there is not a single molecule of DNA left. And yet we detect a signal."

Luc Montagnier's observation that 'high dilutions' contain "water structures which mimic the original molecules." is very important for homeopathy. But, he never explained the exact molecular mechanism by which this 'mimicking' happens, and more important, did not take up the task of explaining the dynamics of homeopathic therapeutics involved in 'simila similibus curentur'. The result was, people interested in 'ultra-scientific' and 'dynamic' interpretation of homeopathy actually hijacked his theory. Only because he said he could detect 'electromagnetic signals' showing the presence of 'molecular memory of dugs' in high dilutions, these theoreticians used it to rationalize their pseudoscientific concepts of 'resonance', 'vibrations', frequencies', 'drug transmissions', 'radionics', 'drug teleportation' and the like they use in explaining homeopathy. Luc Montagnier's limitation lies in the fact that he could not understand the concept of 'molecular imprinting'.

If he could have explained the phenomenon he observed in terms of 'molecular imprinting', instead of 'mimicking' and 'vibrations', the situation would have been entirely different. If he could have gone a bit forward and explained the source of 'electromagnetic signals' as 'molecular imprints', he could have avoided the 'occult' homeopaths and 'spiritual homeopaths hijacking and misusing his statements for their ulterior motives.

To be more exact, Montagnier should have said**:** "high dilutions of something are not nothing- hey are water structures which are 'three-dimensional negative molecular imprints' of original molecules." NOT MIMICS. That could have made a big difference for homeopathy.

According to Luc Montaigner, the 'nanostructures' formed in high dilutions are 'mimics' of original molecules. But in terms of modern molecular imprinting technology, 'molecular imprints' are 3d structures with configurations just complementary to original molecules. If we consider original molecules as 'keys', montaigner consider 'nanostructures' as duplicate keys. According to my concept, 'molecular imprints' are 'artificial key holes' that could act as 'artificial binding sites' for original keys or keys

similar to them. Molecular imprints bind to the pathogenic molecules due to complementary configuration, exactly like a key hole binds to a key. MOLECULAR IMPRINTING PRODUCES ARTIFICIAL KEY-HOLES, NOT DUPLICATE KEYS. Once we understand this difference in perceptions, it would be easy for us to understand 'similia similibus curentur' scientifically.

Only 'three-dimensional negative molecular imprints' can explain the molecular mechanism of homeopathic therapeutics, where potentized drugs are not acting similar to original drug molecules, but just as exact 'opposites'. That is 'similia similibus curentur'.

“I can’t say that homeopathy is right in everything. What I can say now is that the high dilutions are right. High dilutions of something are not nothing. They are water structures which mimic the original molecules.”

Bnveneste also, similar to Montagnier, perceived potentized drugs as "water structures which mimic the original molecules". Both of them were wrong.

I say, potentized drugs are "water structures which are 'three-dimensional negative molecular imprints' of original molecules.” I am trying to explain homeopathy on the basis of this "molecular imprint" concept.

In his article **"DNA Between Physics and Biology",** Luc Montaigner explains about his famous experiment in which he used 'nano-water structures' mimicking specific dna fragments contained 'ultra dilutions' to induce in vitro synthesize of similar dna fragments using nucleotide primers and plymeraze enzyme as follows:

"Now we undertake the most critical step: to investigate the specificity of the induced water nanostructures by recreating from them the DNA sequence. For this we add to the tube of signalized water all the ingredients to synthesize the DNA by polymerase chain reaction (nucleotides, primers, polymerase). The amplification was performed under classical conditions (35 cycles) in a thermocycler. The DNA produced was then submitted to electrophoresis in an agarose gel. Indeed, a DNA band of the expected size of the original LTR fragment was detected . We further verified that this DNA had a sequence identical or close to identical to the original DNA sequence of the LTR. In fact, it was 98% identical (2 nucleotide difference) out of 104. This experiment was found to be highly reproducible (12 out of 12) and was also repeated with another DNA

sequence from a bacterium, Borrelia burgdorferi, the agent of Lyme disease. It clearly shows that the water nanostructures and their electromagnetic resonance can faithfully perpetuate DNA information..."

Instead of this vague theorizing about "water nanostructures and their electromagnetic resonance can faithfully perpetuate DNA information", he could have explained this phenomenon in a more rational way, if he could understand the concept of 'molecular imprinting' involved in high dilutions.

According to my view, it is not the 'electro magnetic resonance' or 'mimicking' that induced dna synthesis in his experiments. Actually, the high dilutions of dna solutions he preapared contained 'molecular imprints' of specific dna fragments. When he added nucleotide primers and polymerase enzymes into this molecular imprinted water medium, molecular imprints could have held the nucleotide primers in the correct sequence and position similar to that of original dna fragment. Then, the polymeraze enzyme could have connected these primers to form dna molecules exactly similar to original one. Here, 'molecular imprints' acted as 'templates', and helped in arranging nucleotide primers in correct sequence by binding to them, due to the specific configurational affinity.

Since he had no any idea of molecular imprinting, he tried to explain this phenomenon in terms of 'electromagnetic resonance', which led to ultra-scientific interpretations. This limitations helped the 'energy medicine' theorists to hijack and misuse the works of luc montaigner.

A few days back, one of my friends posted this link on my wall : http://www.normanallan.com/Sci/bs.html.

Many homeopaths point to this link as the most scientific and authoritative reference for research evidences in favor of homeopathy. This article titled “Beyond Substance” by Norman Allan, Ph.D.is about the much discussed findings regarding the so-called “GHOST-DNA” molecules in ultra-diluted aqueous solutions of viral DNA. This work was referred to the name of Professor Mounir AbouHaidar and his colleagues, Dr. Mohammed Eweida and Michael Dobbs. Exactly, this GHOST DNA concept is same as that of Luc Montagnier. If you read the article carefully, you will understand how clever our 'pseudoscientists' are in hijacking scientific studies and misuse them for

pseudoscientific explanations of homeopathy. Hence, I think it is worth analyzing the observations and conclusions of this article in detail.

This article titled **“Beyond Substance”** by Norman Allan, Ph.D.is about the much discussed findings regarding the so-called “GHOST-DNA” molecules in ultra-diluted aqueous solutions of viral DNA. This work was referred to the name of Professor Mounir AbouHaidar and his colleagues, Dr. Mohammed Eweida and Michael Dobbs.

I find this article is a classical example of how scientific studies are misused for pseudo-scientific explanations of homeopathy.

“The team found that a solution of viral DNA, diluted beyond substance in the manner of homeopathy, can physically bind its substantial, molecular, complementary strand. This implies that the water “remembers” the substance that was in it. It behaves as though the DNA – even though diluted beyond substance – were still there. The ramifications of this phenomenon deeply effects ours understanding of physics, medicine, and of psychology, and as I hope to explain may prove to be a key to our understanding consciousness”.

“In Prof. AbouHaidar’s viral assay a solution of DNA, the genetic ribbon – even after it has been serially diluted until there was no substance left – binds its labeled complementary strand. This means water can be patterned; can carry a signal, and in this sense “remembers”. Water prefers to be ordered, to be patterned, prefers this to our usual conception of liquid as random. Water is stressed by, rather than enjoying amorphous chaos. It prefers to be organized, to behave like a crystal. So water takes whatever substance we put in it, be that salt, or sulphur, or viral DNA, as a seed from which to organize a pattern”.

Based on this research finding, the author tries to explain the homeopathic potentization according to his speculative theorizations.

He expects that if the observed “phenomenon can be replicated, we have a scientific revolution, a paradigm shift, possibly as vast as the discovery of electricity some two hundred and fifty years ago: vast because, as with electricity, it shows us whole new dimensions of order underpinning the phenomenal world, and there is no predicting where all of this may lead”.

The author, himself a physical scientist, explains how he was attracted to this work:

"Jacque Benveniste was a prominent French immunologist, chief immunologist at the government's research institute, INSERM. When two of his research assistants asked him if they might conduct an experiment into homeopathy, believing a happy coworker is a good coworker, Benveniste said they might. They showed the results to Benveniste, and he became curious.

If you take an antigen, and dilute it homeopathically – again, diluted until there is no substance – it will still generate an immunological response in certain white blood cells. In this case Benveniste, and his colleagues, were looking at basophils.

Benveniste took these findings to the most prestigious scientific journal, Nature. Because of Benveniste's prominence Maddox, the editor of Nature, said he would publish the work if Benveniste could find three reputable laboratories that could replicate his findings. "That should get rid of him," thought Maddox.

Bruce Pomeranz, of the University of Toronto, was one of the researchers that "replicated" the work, along with labs in Milan and Tel Aviv.

In June 1988 the journal Nature, the gatekeeper of scientific orthodoxy, published Benveniste's ultradilution (homeopathy) paper. The implications of this work are revolutionary, a paradigm shift it there ever was one. There are a lot of people who would rather fight than shift. Nature, the journal, as part of their publishing arrangement with Benveniste, sent a team to investigate his lab. The team included Randy the Magician, to look for sleight of hand, Walter Stewart, a biologist and statistician who had made his reputation as a figure crunching fraud-detector, and the editor, Maddox himself, who had a background in physics. It did not, however, include a cell biologist who might understand the nuances of Benveniste's experiment. The team had already made up their minds (as Walter Stewart wrote in "Omni"). They knew there had to be a problem with the experiment because in their view the experiment was impossible. In the lab, Beneviniste and his team demonstrated the phenomenon to them three times, but the Nature team had determined before hand that it was an impossible experiment, and not knowing what else to doubt they decided that they couldn't trust Beneveniste"blind". The visiting team therefore insisted on adding their own "blind" to the procedure. To do this they introduced an extra manipulation of the samples (they

moved the samples into new tubes). Of course this added procedure might or might not effect the outcome of an already delicate experiment. The investigating team sealed their extra code in an envelope, wrapped that up in silver foil (to foil X-ray eyes), and stuck it on to the ceiling of the lab with a video camera trained on it.! When, in this one trial, this new variation of the experiment no longer worked, Maddox announced that the whole affair was a delusion, or a fraud. Such is the stature of the journal, Nature, that the "expert's" pronouncement was treated with gravity. "In our view, ultradilution should not work. Therefore it does not. Trust us. We've looked. We've tried it." (I paraphrase.) This was all every unscientific, yet here the matter rests. (Work by Professor M Roberfroid, Madeleine Ennis, and colleagues, has since vindicated Beneviniste's work and homeopath.)

Now our name was on this controversial Benveniste ultradilution paper, and we're a very respectable laboratory, so there was a large section of the world, at least here in Canada, that looked to us to see what we'd finally have to say on the matter. "We have promising preliminary results," was all the Professor could say. That, and "No comment." So when Prof. AbouHaidar's team stumbled on the incredible that DNA diluted (one part in ten) eighteen or twenty five times (diluted beyond substance) still binds its complementary strand – they came to see us".

This was how by Norman Allan, Ph.D, author of present article became involved in this work.

The work was done as follows:

"Prof. AbouHaidar is a virologist; a Professor with tenure at the University of Toronto. Professor AbouHaidar was working on a viral assay. You'd take a plant from a field – he was working with potatoes – grind it up, run it through the Professor's assay, and it would tell you whether there was any of a particular virus present in those potatoes. It works like this: you take a virus, which in this case was a DNA virus, and you "digest it", splitting each bit of viral DNA into two single complementary strands. Then you divide this digest into two parts. At this point the two parts are (statistically) identical. Take one half of this now single stranded DNA and call it the "target". Take the other half and call it the "probe".

The target is spotted out on a filter paper – that is to say, you put a drop of it on a microfilter to make a spot. Then you dilute what's left one part in ten, and put a drop of

the dilute solution at a second spot. Then dilute again one part in ten, and spot it out again. Keep diluting and spotting out the successive dilutions. This is to test how sensitive the assay is. After all, we may be looking for a little bit of virus in a whole field of potatoes. We need a sensitive assay.

Having spotted out all these successive dilutions, we take the filter paper and bake it at 80 degrees centigrade. After baking, the target won't wash off. Next let us consider the probe. The probe, remember, in this explanation, the probe is made up of the same single stranded viral DNA fragments. These we're going to label so we can see them. We mix them with avidin-biotin. The avidin binds to the DNA, and the biotin will bind to a stain, so we'll get a dark spot where our DNA-avidin-biotin binds the stain.

Now we take our probe and wash it over the targeted filter paper. Where the DNA in the probe finds its complementary strand in the target it binds to it. Next we wash the probe and target, and only where the probe has bound to its complementary strand will there be any of the probe be left. The rest is washed away. Then we 'develop' the probe/target filterpaper with our stain. Only where the labeled probe has bound to the target will we see any stain. In the test as set it up, the stain gets lighter and lighter with each dilution. It's dark, almost black, in the first couple of dilutions, but fades out of sight at about the seventh dilution.

That's the assay AbouHaidar was refining. (Actually, it's Dr. Southern's dot-blot test, so it's called "Southern blot", though Dr. Western's "Western dot-blot" predates it and is more widely used.). Mohammed Eweida was a postdoc working in Prof. AbouHaidar's lab with this Southern blot assay. Mohammed Ewieda wasn't very happy about his situation. I don't know why, but he was out of there: he was off to the Karolinska Institute in Stockholm in the summer: and so, perhaps to kill time, he spotted out the dilutions eighteen times, even though the staining was lost to sight at the seventh, and and he got a dark spot at the eighteenth dilution!

"Look at that," said Dr. Eweida to Michael Dobbs, a postgraduate student working in the lab. Some months before Mike Dobbs had been to Jacque Benveniste's lecture on ultradilution. (In Homeopathy substances are diluted beyond the infinitesimal till there's no substance left, which is what is meant by "ultradilution".) So, when Mohammed showed Michael his anomalous result with an unexpected spot at the eighteenth dilution Michael thought, incredulously, "ultradilution". "Eh, Mohammed," he said. "Do that again." Dr. Eweida repeated the viral assay, this time taking it out to the fiftieth decimal

(one in ten) dilution. (That's 10-50 where ten to the minus 30 is like a drop in the ocean, and 10-37 is like a drop in a million oceans. At 10-26 we pass "Avagadro's number [which relates to the number of molecules in a "gram molecule"] and would no longer expect to find a single molecule in a gram.) Again there was a dark spot that shouldn't be there at the eighteenth dilution, and now there were also stained spots at the 19th dilution, and the 25th and 26th, and the 38th, and 43rd dilution, but not at the dilutions in between. At the 25th and 26th dilutions there is certainly no substance left in the solution. We have passed Avagadro's number. There is no DNA left in the target. And yet the undiluted complementary strands in the probe (labeled with avidin-biotin) binds to the target! They can not be binding to a substance, not to molecular DNA. They may be binding to a signal, an electrical signal imprinted into the nitrocellulose. They are binding to something!

At first sight, to some, this has seemed to contradict classical science. "How can water, with nothing in it, remember what was there formerly, but is no longer there?" But here were Prof. AbouHaidar and Dr. Eweida, here they were with these filterpapers, dozens of them, with dark spots at the 18th and 19th dilution, and the 25th and 26th. Sometimes the pattern moved a little: sometimes only the 18th turned dark, once it was the 17th.

Well, Prof. AbouHaidar when he first saw it, suspected a joke. And when Dr. Eweida repeated it yet again, Menir AbouHaidar suspected a hoax. So he tried it himself, and there it was. No hoax.

What to do next? One of the next things that Prof. AbouHaidar did was to come and see us, Dr. Pomeranz and his research team. From here on in I'm going to call Dr. Pomeranz, the Professor. The Professor's lab (where I had worked for seven years) was one of the labs that replicated Benveniste's work with ultradilute antigens. The Professor's name was on Benveniste's controversial paper, so Prof. AbouHaidar came to talk to us, in confidence, to hear what we could tell them. "Do it again," we said. And they did.

What does all this mean? It suggests a multitude of things. First let's look at the patterning of water. If you put, say, one part salt in a hundred parts of water, it seems that the salt will pattern the water – the water mirrors the salt's "vibration". Certainly with Prof. AbouHaidar's DNA we seem to see an electrical patterning that comes back into register with the original space/charge patterning at the 18th dilution."

Based on these observations, the author tries to explain homeopathy as follows:

"Now if homeopathic [ultradilute, potentiated] remedies are having effects on organisms – they cured my cat – one of the implications, it seems, is that the body has vibrational fields, patterned energy fields, on which these (vibrational, patterned) remedies can work. Many people, particularly those on the fringe of science, and beyond, have been saying this for years. But no one has demonstrated it in any convincing or replicable manner. This is where Prof. AbouHaidar's discovery is so special. Finally we have a handle into this realm of vibration."

Obviously, the author is caught in the "theory of vibrations" in his interpretations. This is a clear example of how a scientist slips and falls into "pseudoscience". He understands he is moving into the realm of 'fringe science' and 'beyond science'. And now he is trying to utilize "AbouHaidar's discovery" to rationalize the speculations of 'fringe science' and 'beyond science', which "have been saying this for years". He tries to utilize this unexplained phenomenon as a "handle into this realm of vibration". The intention of the author is clear now. This shows how science can be used to rationalize 'unscientific' theories.

How does homeopathy work in practice? As a scientist, we would expect from the author an explanation that would fit to the existing scientific knowledge system available to modern biochemistry, molecular biology and medical science. But to our total dismay, he comes with totally unscientific and irrational concepts and arguments. He says:

"How does homeopathy work in practice? At its simplest level, let's say you're in an accident, traumatized, the body goes into a particular pattern of vibration, in this case a kind of 'shock', Often people seem to get stuck in these patterns. Tinctures made from the plant Arnica have a vibratory pattern that (we may imagine) closely resembles this vibratory pattern associated with traumatic shock. Empirically it has been observed, again and again, that the potentised remedy prepared from Arnica helps physically traumatised people to heal. So, it may be that the body becomes locked in a particular oscillatory pattern, and the remedy, the "similar", helps to jog it free, to loosen that pattern's hold on the body so the body can stop repetitively singing that song"

How is it? Is he talking science? Do these words reflect a scientific mind? We had many times heard this pseudo-scientific 'theory of vibrations' from so-called vitalists, classical homeopaths and metaphysical theoreticians. But it is a real pity to hear this from a

reputed scientist. As a scientist, we would expect him to talk about the bio-chemical derangements caused by traumas, and how the constituent molecules of arnica tincture rectify these bio-molecular errors. How could the author reach such unscientific conclusions from the reported research findings? The researchers only observed the presence of some sort of 'memory' of DNA molecules in ultra-dilutions in water. They said nothing about the mechanism of this 'memory'. Obviously, the author utilizes these findings to rationalize his 'fringe science' speculations. This is unfair and unethical as far as a scientist is concerned.

He continues his imaginative speculations further:

"A further implication of homeopathy is seen in the fact that the personality, the emotional make-up, the thought patterns, of patients are the most important guiding feature in deciding which remedy to use. The "mentals" are given more weight then the physical symptoms. The implication of this is that mind, that thought and emotion, are patterns".

We expect to hear a scientist explain "thought and emotions" on the basis of neurochemistry, where as this 'scientist' is talking about 'patterns'. Wonderful!.

His interpretation of 'patterns' in water formed by adding salt shows his total ignorance regarding the process of 'hydration' in aqueous solutions. Every science student knows that so-called patterning is nothing but supra-molecular clustering of water molecules through hydrogen bonding. I think he uses the terms like 'patterns' and vibrations' to take this phenomenon into the realm of 'fringe science' which seems to be a subject very dear to him.

Instead of speculating over 'patterns' and 'vibrations', and discussing 'fringe science' and 'beyond science', this phenomenon could have been scientifically explained on the basis of "Molecular Imprinting". Such an explanation would fit in to the existing scientific knowledge-system perfectly. More over, based on this concept, we can provide scientific explanation to the molecular mechanism of therapeutic action of potentized homeopathic medicines, fitting to modern biochemistry and molecular biology. HOMEOPATHY COULD BE DEALT WITH NOT AS A 'FRINGE SCIENCE" or "BEYOND SCIENCE". BUT AS REAL SCIENCE!

Let us listen to what the author says further on this subject:

“Come back to the one part salt in a hundred parts water. If we take this salt water and dissolve it again one part in a hundred in clear water, and shake it, it again patterns the water, but this time with some changes. Remember it’s at the 18th and 19th dilution that AbouHaidar’s target bound the probe (at least, that was the case in the first sample that MAME showed us). At the 15th, 16th, there was nothing. This suggests that we are seeing something similar to the interference phenomenon that occurs with harmonic overlays. This is a fairly well known phenomenon (e.g. “Poincare’s recurrence”, see below). However here because it’s a dilution procedure, the harmonics are going to include lower frequency multiples, “subharmonics”, of the original signal as well as the more usual higher frequency harmonics.

It is very funny to see how hastily the author jumps to his pre-determined conclusions such as ‘interference’ phenomenon and ‘frequency harmonics’, based simply on the observed phenomenon of ‘patterning’ of water in salt solutions. Before that he should have applied some thought regarding ‘hydrogen bonding’, hydration’ and ‘supra-molecular clustering’, and also the probability of ‘molecular imprinting’.

“Imagine a conjurer’s rope. Take a segment out of that magician’s rope – say one foot out of ten – and hold it taut between your hands, and twang it. Now (by magic) put it back in the original rope. The note, the vibration, in the small piece will pattern and inform the longer piece. The longer piece will now carry that information, but it will also, during the process, generate harmonics, multiples of that original note. But note, in the dilution process (which the homeopaths have traditionally called “potentiation”) it becomes intuitively apparent that we will be generating both harmonics andsubharmonics of the original pattern. And this explains one of the mysteries of homeopathy”

How can see declare that “this explains one of the mysteries of homeopathy”? Obviously, he is overtly trying to ‘prove’ his concepts of ‘vibration theory’ in homeopathy utilizing the unexplained phenomenon observed by the research team..

“It is part of the traditional homeopathic wisdom that the higher potencies, the higher dilutions, are stronger and deeper acting than the lower potencies: that the mother tincture and the low potencies act superficially, at a surface level, at skin level, and at the physical level, while the high potencies act deeper and begin to effect emotions, thoughts, personality – and they are also, the high potencies, much stronger.”

Author tries to utilize the “traditional wisdom’ of homeopathy to rationalize his speculations. As a scientist, we expect from him rational explanations for those “traditional wisdom” on the basis of “scientific wisdom”. Not the other way.

“If I were going to treat you, say, with salt, sodium chloride (in Homeopathy we latinize it and call it Nat mur, short for Natrium muraticum). Now why would I treat you with Nat mur. Nat mur is one of the polycrests, which is to say it has power over an extremely broad range of symptoms, and with Nat mur, for sure, I would be guided in large part by personality and etiology (causation). Nat mur is seen in problems caused by grief where the person internalises. With that internalizing there’s a withholding and a holding. The person is likely to brood. “Attachment” is a key word with nat mur, and yet they don’t like to be consoled. Consolation will irritate them. The substance, salt, will cause (this pattern, this disposition) these problems, and it will also cure them. That’s why we call this type of medicine homeopathy: we treat like with like. This thought, that “like cures like” was Hahnemann’s great “law”. Now this, to me, is not intuitively apparent. But it is a piece of empiricism that was first recorded by Hippocrates, was reiterated by Paracelsus, and explored and developed into a fine art and science by Hahnemann at the end of the eighteenth and the beginning of the nineteenth century. Hahnemann experimented on himself. His first experiment was to take quinine. Quinine gave him ague-like fevers!”

As per the author this is the “scientific” explanation for the mechanism of homeopathic therapeutics. The wonder is that this ‘explanation’ comes from a “scientist”. According to him, “internalized grief” creates them “changes in pattern” in the “emotions” of an individual. “The substance, salt, will cause (this pattern, this disposition) these problems, and it will also cure them”. “That’s why we call this type of medicine homeopathy: we treat like with like”. How would this “explain the mysteries of homeopathy” as the author claim? To become a scientific explanation, he would have told us how “grief” creates the pathological disturbances in an individual, and what are the neuro-chemical errors happening at molecular level in various related biological pathways. We would also expect him to explain how sodium chloride creates similar biochemical changes individuals. If he wants to “explain the mysteries of homeopathy”, he should also explain what is the active principles in potentized sodium chloride, and how these active principles interact with the biochemical molecules and relieve the organism from the molecular errors caused by “grief”. That is the way a real scientist would talk about a science of therapeutics. Instead, the author talks about “patterns”

created by “grief” and “patterns” created by “sodium chloride”. This is not the language of a scientist. We had already had this type of pseudoscientific “explanations’ ad nauseum fro the “gurus” and “masters” of “classical homeopathy”.

After making all these big noises about “explaining the mysteries” of homeopathy on the basis of concepts like “fringe science”, “beyond science”, “beyond substance”, “harmonics”, “resonance”, “vibrations” etc., it is quite wonderful how the author concludes”

“How do I know all this is what is going on? I don’t. I do know that homeopathy cured my cat. I know that MAME’s ultradilute DNA bound molecular DNA And then we have the well conducted clinical trials of Reilly published in Lancet that demonstrate beyond reasonable doubt that a phenomenon exists. Homeopathic remedies are reproducibly significantly more effective than placebo controls (Reilly 94). We know the phenomenon exists. What I’ve written here is my groping for an explanation.”

See his confession: “ What I’ve written here is my groping for an explanation.”. That means, all through this article we were “groping” along with him! Kindly read further:

“In May 1989 MAME submitted a paper on this ultradilute DNA phenomena to Nature. And Maddox, the editor, sat on it. In the summer of 1989 the University of Toronto opened a new botany building, and Prof. AbouHaidar moved his lab out of its old quarters. After the move and some initial difficulties for a short while the ultradilute experiment ran as before, though the pattern (18, 19, 25, 26) became more chaotic. But then shortly after the move, they lost the phenomenon! It no longer worked. They tried it a few times, and moved back to their mainstream work, genetic engineering, with the world not even ruffled.”

“It was not my impression that procedures, protocols, were clearly and precisely defined in AbouHaidar’s lab. (Elizabeth once characterized their work as “bucket chemistry”.) Nonetheless the phenomenon seemed to be robust up to the move, and for a short while after the move. As far as I am aware, apart from Elizabeth and my follow up in 1992/93, there has been no further work done with the phenomenon”

”The fact that when MAME moved labs the phenomenon vanished is itself fascinating”.

“So I urge anyone who has the opportunity to look for ultradilute activity, whether in dot-blots or in other assays, to do so. We stand on the threshold of a new science, a level of patterning in the natural world hitherto overlooked, and who can say where this knowledge might lead”

Dear friends, is this not the same proverbial situation we say “the mountain delivering a mouse”! The whole verbosity has finally faded into nothing!

According to Luc Montaigner, the 'nanostructures' formed in high dilutions are 'mimics' of original molecules. Scientifically, 'molecular imprints' are 3d structures with configurations just complementary to original molecules. If we consider original molecules as 'keys', montaigner consider 'nanostructures' as duplicate keys. According to my concept, 'molecular imprints' are 'artificial key holes' that could act as 'artificial binding sites' for original keys or keys similar to them. Molecular imprints bind to the pathogenic molecules due to complementary configuration, exactly like a key hole binds to a key. MOLECULAR IMPRINTING PRODUCES ARTIFICIAL KEY-HOLES, NOT DUPLICATE KEYS. Once we understand this difference in perceptions, it would be easy for us to understand 'similia similibus curentur' scientifically.

Concept of 'Molecular imprinting in Water' involved in homeopathic potentization could have many unpredictable and unforeseen implications in the field of genetic engineering and gene therapy. Molecular imprints of genes or 'DNA fragments' could be utilized as templates for preparing 'designer genes' as per requirement in laboratories, that could be utilized for 'genetic repairing' protocols.

Extract the required genes or DNA fragments from healthy genomes and potentize them according to homeopathic procedures. These potencies would obviously contain 'molecular imprints' of DNA fragments used for potentization.

Add these potentized 'DNA' to a mixture of neucleotide primers and DNA polymerase enzymes involved in the biochemical process of DNA synthesis. 'Molecular imprints' can act as templates and selectively bind and hold the neucleotide primers in correct positions and sequences exactly similar to original DNA fragments used for imprinting. Polymerase enzymes will then link the individual neucleotides together to form DNA fragments exactly similar to original ones in terms of neucleotide structure and sequence.

This is a possibility I foresee when thinking about 'molecular imprints'. Interested scientists are free to work upon this idea.