Scientific investigations of Homoeo Materials and Potencies

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Abstract

In this article, we show a glimpse of research avenues offered by Homoeopathy.

Introduction

Homoeopathy is gaining popularity as a medicinal system. However, it is not yet widely accepted as a science. There are two major factors responsible for this. The first and foremost is the lack of medicinal material in what is called a medicine. Secondly, since medicinal prescriptions are based on subjective symptoms, their modalities, chronology and concomitants, the choice of medicine need not be the same for different patients diagnosed as having the same disease according to modern medical system based on pathological, biochemical or radiological tests. For example, where as the same medicine may be prescribed for diseases diagnosed as typhoid, malaria or viral fever, medicines given to different patients diagnosed for example as having malaria may be different. This causes confusion in the minds of people trained to think according to the methodology developed for modern medicine. Since the laws governing action of homoeo medicines appear to be different from those laid down for modern medicine, it is extremely important to develop a scientific understanding of homoeo materials and potencies. This article is based on some research carried out by us in this direction. The fact that the homoeo potencies are effective clinically is first stated in the language of physics. We have then attempted to build a picture as to how the potencies might be carrying the effect of medicines. We then go over to demonstrate, using simple laboratory experiments, that homoeo potencies act. Then, using diagnostic methods, we try to establish some of the pathways of the action of homoeopathic medicines.

HOMOEOPATHIC MEDICINES: A PARADOX

The most striking feature of homoeopathy is the absence of medicinal material in what is called a potentised homoeopathic medicine for potency n>12C. This statement sounds paradoxical, though looked into more carefully; it will unravel some fundamental aspects of physics.

Avogadro's Law

This states that one gram mole of a substance contains $6x10^{23}$ molecules. Thus, for example, since molecular weight of water is 18, according to Avogadro's hypothesis, 18 gms of water will contain $6x10^{23}$ water molecules. This is equally true for any other material.

The Paradox

Homoeopathic medicines are prepared by successive dilution of the medicinal material in a solvent/1/. The solvents generally used are water, ethyl alcohol (liquids), lactose and sucrose (solids). The dilutions frequently used are 1:100. With every dilution, the vial containing the solution is given strokes, that is, some mechanical energy and the resultant preparation is called a potency.

Thus, if one takes a basic medicinal preparation, say mother tincture, then

1 part of MT+99 parts of solvent	=	potency 1 (n=1)
1 part of n=1+99 parts of solvent	=	potency 2 (n=2)
1 part of n=2+99 parts of solvent	=	potency 3 (n=3)

This means that

1 part of potency 1 has 10^{-2} parts of MT
1 part of potency 2 has 10^{-4} parts of MT
1 part of potency 3 has 10^{-6} parts of MT
1 part of potency n has 10^{-2n} parts of MT

Thus, for n=12, in one part of potency 12 we have 10^{-24} parts of the mother tincture. If the mother tincture is a 1 molar solution, this means that beyond 12th potency, there is no medicinal molecule in what is called a medicine. This is

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apparently a paradox since a medicine prepared in this manner is highly potent as a medicine, that is, it has curative values. However, as a chemical, there can be no difference between a solvent and potentised solvent. They should be identical since there is absolutely nothing else that exists in a potentised solvent that is not there in the solvent from which it is prepared. If there is a difference between the potentised solvent and unpotentised solvent, the prime task is to see how such a difference can exist. Deductively one can say that since there is no external agency dictating a difference in a solvent and nth potency of a medicine prepared in it, the difference must be because of some minute changes in the intermolecular arrangements in these systems. In order to see if this is feasible, we will have to look into some underlying physics required to understand this aspect.

Physical Basis of Homoeopathy

In order to formulate a scientific problem, the basic facts need to be expressed in a scientific language.

Restatement of Facts in the Scientific Language

There is ample clinical evidence which shows that there is a difference between a solvent and a homoeopathic potency prepared in it. This fact can be translated into the language of physics as follows/3/:

(1) These solvents (namely water, ethyl alcohol, sucrose, glucose, lactose etc.) can exist in a large number of states (that is, different molecular configurations) at normal temperature and pressure. (A medicine can be prepared with a large number of starting materials).

(2) Any of these states can be obtained in a controlled manner by starting with a known inducing agent called the medicine (solute).

(3) The states are long lived unless influenced by some external agency like temperature, pressure or interaction with other materials (the shelf life of homoeopathic medicines is very long excepting in case of those prepared in water, which is a highly vulnerable fluid).

(4) They store information which is imparted to them by starting materials (the properties of different medicines are different).

(5) The solvent can communicate this information to a system which comes in contact with it and which is capable of interpreting this information (the medicines "act").

(6) In human beings, the sphere of action of a medicine, that is, the centers it is capable of activating, is first mapped during the processes of its proving. This suggests that these liquids can store a matrix of signals which are capable of activating many excitation centres of a system simultaneously.

At this juncture, we have to emphasize that none of the statements made above is either an assumption or a hypothesis. These can be treated as statements of facts - if activeness of homoeopathic medicines is taken as a fact. In other words, the only proof the above statements need is that the homoeopathic medicines act. The laws of physics which support the above statements are yet to be discovered.

The vehicles or solvents which can be used for preparing homoeopathic potencies are sucrose, glucose, lactose, water and ethyl alcohol. Since medicinal properties are transmitted to the vehicle, it has to be preserved as some set of molecular aggregates.

States of Matter

Broadly speaking, matter can exist in three different states, solid, liquid and gaseous, which occur as a function of temperature. However, even at a particular temperature, matter can have different forms. A well known example is that of carbon. It has several stable states at room temperature, such as diamond, graphite, soot, coal etc. Similarly phosphorus can also exist in different allotropic forms. At any given temperature and pressure, the molecules of any substance always try to acquire a minimum energy configuration, that is, arrangemen of molecules in such a way that the total energy c the system is minimum. If it can have severa minimum energy configurations, then each one c these represents a stable state or phase of th matter. Inter conversion between different states not possible, unless external energy is supplie because of potential barrier between differe minimum energy wells.

Sucrose, glucose and lactose are solids ar therefore one can imagine that such stable stat or molecular configurations, if created, can b maintained since the relaxation times in the systems will be very long. But how this could possible in water and ethyl alcohol? We c foresee two possible ways in which this is possib

1. These liquids are known to have anomalous properties because of interlinking of their molecules by hydrogen bonds. In fact, hydrogen bonding is possible even in sucrose, lactose, and glucose as also in their aqueous solutions. Hence, let us understand what is hydrogen bonding.

Hydrogen Bonding

Hydrogen bonding can be explained in a simplified manner. For example, take the case of water. In a water molecule, each oxygen atom is bonded to two hydrogen atoms by sharing an electron with each of them. This bond between an oxygen and hydrogen atom is called a covalent bond. Hydrogen atom has only one electron (negative charge). Due to covalent bonding between hydrogen and oxygen, this electron is localized between these two atoms. Hence, the hydrogen nucleus, that is the proton with the positive charge, is slightly exposed. On the other hand, oxygen is left with an exposed negative charge due to its outer unbonded electrons. This leads to a weak attraction between hydrogen atom of one water molecule with oxygen atom of another, thus forming a weak bond called the hydrogen bond. In liquid water, every oxygen molecule can form two covalent (O-H) bonds and two hydrogen (O- ----H) bonds, thus leading to a tetrahedrally bonded network of water molecules (figure 1a).

Associated Liquids

This is also true of a class of fluids called associated liquids where molecules of the liquid are linked together because of hydrogen bonding between hydrogen and any other electro negative atom (like nitrogen). Water and ethyl alcohol belong to this class of fluids. In these liquids, molecules do not exist as single units, but are linked together forming dimmers, trimers, tetramers etc (polymerization) (figure 1b).

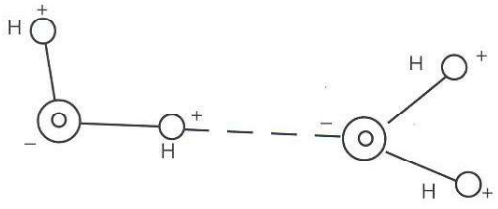

Figure-1a Hydrogen Bonding in Water

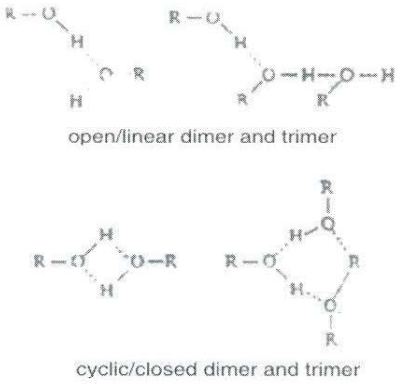

Figure1b Polymerization and formation of associations by hydrogen bonding Dimers and trimers

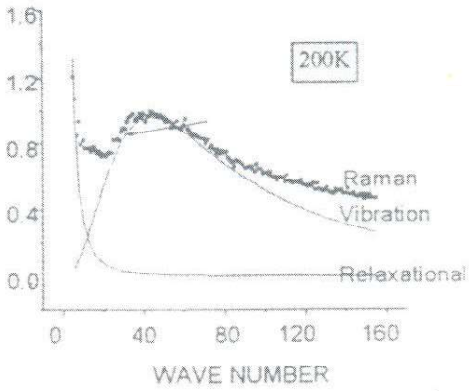

Figure 2a Raman Spectra at 200k

Since the vehicles used for preparing Homoeopathic potencies have hydrogen bonding characteristics, it is possible that the signals are preserved by forming specific hydrogen bonded networks.

2 Vibrational Spectra of Liquids

Another way in which the specific signals can be preserved is as modulation in low frequency

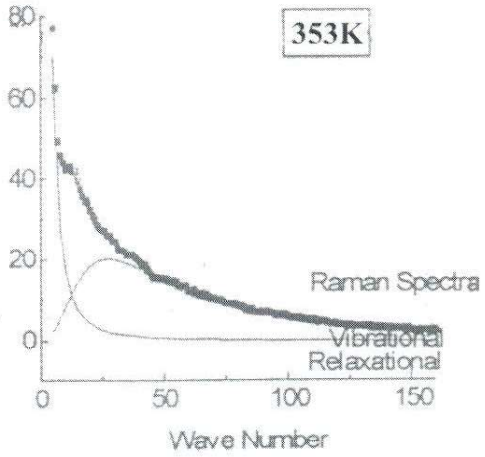

Figure 2b Raman Spectra at 353k

molecular vibrations /5/. Atoms and molecules are always trying to move. Their motions can be broadly classified as translational, rotational and vibrational. At high temperatures, all these motions are possible but at low temperatures, translational motion is frozen and atoms/molecules can either rotate around themselves or vibrate with respect to a fixed point/axis. In liquid state, these vibrational energies dissipate by relaxational processes. In solids, the frequency of vibration will be characteristic of a particular solid and all molecules/ atoms will vibrate cooperatively giving rise to what is called a vibrational mode or wave. If a vibration of some other frequency is induced in a solid, it will decay as a function of time. In a liquid, since inter-molecular distances are not fixed, it is difficult to sustain a vibrational mode. However, now it is well accepted that over very short distances, say about a couple of nearest neighbours, such molecular orderings do occur. This gives rise to a vibrational spectrum which can be seen by Raman scattering. This is a favourable situation for understanding the action of homoeopathic medicines. Raman scattering spectra of aqueous sucrose solution at 200K and at 353K is seen in figure 2. We can see a well defined inelastic peak called the boson peak at 200K. Although at 353K this peak is not visible, if the spectrum is analysed as consisting of relaxational and vibrational peaks, vibrational part of the peak can still be seen. This means that some inter-molecular modes do exist which given rise to this vibrational spectra. The advantage of being in a liquid state is that the inter-molecular distances are not fixed. This gives rise to wide vibrational spectrum having frequencies from 10 cm^{-1} cm to 150 cm^{-1}. Thus, in principle it is possible that inter-molecular vibrational frequencies can be modulated by the presence of another molecule namely the solute molecule. For large potencies (n>12), where solute molecules are not present, these modulations can still remain carrying the impression of the starting solute. Thus, in principle, even in the absence of matter, a signature of the material in the form of modulation in inter-molecular vibrational frequencies can be stored. This is one of the possible ways in which homoeopathic potencies can retain the memory of solute molecule in the form of a signature.

Properties of water which suggest that formation of several stable states may be possible

How is it possible for a liquid like water and ethyl alcohol to maintain the signal, that is, the property that has been transmitted by the medicinal substance? A literature survey of research on water gives following information:

a) In liquid water, molecules are linked together forming multimers, with clusters of hundreds of molecules being possible /5/. It is possible to have infinite structural variations of water resonating between each other /6/.

b) Structure of water is strongly affected by the presence of small amounts of solutes /7/. In biological systems where water exists as a vicinal fluid, its structure depends upon its site /8/. In these systems, water plays an active role in transmission of signals.

c) Frank and Wen have postulated that formation of bonds in liquid water is predominantly a cooperative phenomenon so that in most cases, when one bond forms, several other

In addition, we also know of the varied role played by hydrogen bonds in proteins, DNA and many other molecules of vital importance.

Difference between simple dilutions and potentization

In a simple dilution, material quantity of the medicine will be reduced with successive dilution, without transferring medicinal property to the solvent with which it is diluted. Now let us visualize how medicine (solute) might transfer information to the solvent during potentisation.

1. When the medicinal substance is present in material quantity, the effect of first few potentizations is to homogeneously disperse the solute.
2. At sufficiently low dilutions, one can assume that the solute particles are far apart from each other. The solvent around these monodispersed solute units gets structured through the hydrogen bonded network.
3. Solvent which is in between two such units also links so as to form a replica of the structured region.
4. Further potentisation decreases the material quantity of the medicine. While potentizing, the energy supplied by the strokes stimulates the solvent to acquire the structure compatible with that a drop of the previous potency. Qualitatively one may say that water molecules are capable of mapping the charge density distribution on a solute molecule and preserving it.
5. The physical properties of the solvent like melting and boiling points, IR, UV absorpition spectra, NMR spectra, remain unaltered for a

potency n>12. This suggests that for n>12, the hydrogen bond energy distribution of the potentised solvent is not different from that of the starting solvent. Then, the information imparted by the starting solute during potentisation is within the errors bars of the hydrogen bond energies. In other words, the information might be stored as the difference in the hydrogen bond energies, that is, by "differential hydrogen bonding". In liquid water, hydrogen bond energies are about 2 to 8 Kcal/mole. The stored information may then be in the range of about <0.5 Kcal/mole. This appears to be of the right order of magnitude to excite the nerve centres in higher animals /9/.

6. Like any other liquid, water is a fluid. Hence, the hydrogen bonds will be continuously making and breaking. However, the properties of a potency remain unchanged, thus suggesting that the mechanism of cooperative making and breaking of hydrogen bonds may be extended to imply the preservation of the embedded liquid structures.

If differential hydrogen bonding is responsible for storing information, any material having hydrogen bonded intermolecular network should be a candidate for such a storage system. Ethyl alcohol is one such example as this is used as a vehicle for the preservation of most homoeopathic medicines. However, for purpose other than the medicinal, (such as in experiments to test the validity of these principles), other materials and associated liquids should be considered.

A similar picture can be built-up if one considers modulation in vibrational modes as a signature of a medicine.

Action of Homoeopathic Medicine

When the potentised solvent comes in contact with any system, there will be exchange of energy between two systems until an equilibrium is reached. One can visualize this in a simplified manner. When a glass of hot water at a temperature T_1 is mixed with a glass of cold water at a temperature T_2, there is an exchange of heat energy and the system approaches a final equilibrium temperature T in between T_1 and T_2.

The host system can be living or non-living. In living systems, the energy exchange should match with the energy required by the system centres to get excited, then only the medicine will act. The relaxation back to normal states will cause cure.

5. OBJECTIVE SCIENTIFIC INVESTIGATIONS

Although clinical results give ample evidence demonstrating the effectiveness of homoeopathy, in order for it to be accepted as a science, it is necessary to design experiments to demonstrate unequivocally that there is a difference between solvent and nth potency (n>12) of a medicine prepared in it, an experiment which can be repeated by anybody, any where in the world with reproducible results. It is very difficult to design such a physical experiment. Fortuitously, we know

TABLE - I

ENZYME ACTIVITY µM OF P-NITROPHENOL				
	OPEN		BLIND	
TIME IN HOURS POTENCY	48	% STIM. OVERCONTR.	48	% STIM. OVERCONTR.
CONTROL	0.26±0.05		0.32±0.03	
15	0.44±0.08	69%	0.75±0.08	150%
30	0.48±0.05	84%	0.58±0.03	93%
200	0.68±0.05	130%	0.48±0.05	60%
1000	0.82±0.08	215%	0.62±0.08	107%

that homoeopathic medicines have biological activity. Hence, we can design an experiment to demonstrate that bio activity of solvent and potentised solvent are different.

In any experiment, we have an input signal, probe and an output signal. The probe can be physical such as X-rays, UV etc or biological such as microbes. Presently, we will demonstrate the activity of a potentised solvent by using Actinomyces Sp. Microbes as a probe.

EXPERIMENTS WITH ACTINOMYCES SP.

Let us see the results of an experiment demonstrating the effect of potencies of Lycopodium on Alkaline Phosphatase activity in bacteria Actinomyces SP. /2/. The culture of actinomyces sp. was grown in minimal medium with 1% glucose as shake culture for 48 hours at 30°C. 1ml of sample (medicine potentised in freshly distilled water) or control (distilled water) is added to a flask of 50ml culture, shaken and incubated further under similar conditions. Three flasks per sample are used in a typical experiment. 3ml of cultures were taken periodically for measuring enzyme activity.

Table I gives the result of one open and one double blind experiment. We find that there is a remarkable increase in stimulation of enzyme activity over that of control with different potencies of Lycopodium. Results of this experiment suggest that potencies of Lycopodium appear to have an effect on enzyme activity in bacteria Actinomyces SP.

Now let us understand the philosophy behind this experiment. We know that homoeopathic medicines act on human beings. We also see their effects on our domestic animals and pets. But what we have to understand is the efficacy of these medicinal solvents as carriers of some sort of a signal. Do they act only on higher forms of life? The answer is plain and simple no! Why? Because if you take one drop of say a potency 14, put it in 99 parts of solvent and give some 10 strokes, you are able to create 15th potency. What does this mean? This means that with what ever is getting stored as a medicine, it is possible to excite even a chemical system such as water or ethyl alcohol to get potentised by one percent or even less of a medicinal potency. Hence, in the present experiments, we have used microbes as individual biological system, let us say as "persons". The aim was to see if the potentised medium has any biological activity. Experiments were not intended to test the effect of a medicine on a microbe as is done in in-vitro pathological experiments. The philosophy behind such a choice is that if an nth potency can be used to dynamise a solvent, that is, a chemical, to (N+1)th potency, the medicine is capable of acting on a chemical system. Hence, it should be capable of activating a biological system as well.

It is illustrative to see from the Table that potencies of Lycopodium show a definite stimulating effect on activity of alkaline phosphatase in Actinomyces sp. The average stimulation ~111% over that of control is quite significant. Enzyme activity can increase only if the genes which are responsible for this activity are triggered. Thus, the medicine appears to modify the function of genes. We emphasize by repeating the statement again, that the mode of action of medicines appears to be by modifying the gene response.

6. CLINICAL RESEARCH

Homoeopathy is effective in curing disease. But it dose not get wide acceptance because of lack of scientific evidence in terms of modern techniques. We want to demonstrate by given results of a couple of experiments that study of patients using diagnostic techniques not only proves objectively the action of the medicines but also shows the mode of action of the medicine and the pathways of its action. Such studies will throw light on the process of cure.

USE OF DIAGNOSTIC TOOLS TO UNDERSTAND THE PATHWAYS OF ACTION OF HOMOEOPATHIC MEDICINES

A. IMPENDANCE PLETHYSMOGRAPHIC (IPG) INVESTIGATIONS

This is a non-invasive technique wherein blood follow in the extremities can be measured /10/. **Fig.3** shows IPG record of both the wrists before and after administration of placebo, S15, S1000 and S10000. As can be seen from the figure, the amplitude becomes nearly equal in both the wrists one hour after administration of Sulphur 10M.

Fig. 4 shows IPG wave forms recorded from right and left ankles of one patient before and after the administration of Gelsemium 200. As can be seen from the figure, there is spectacular increase in the blood flow in the left ankle making the blood flow symmetrical with Gelsemium 200. These experiments are useful in developing scientific basis

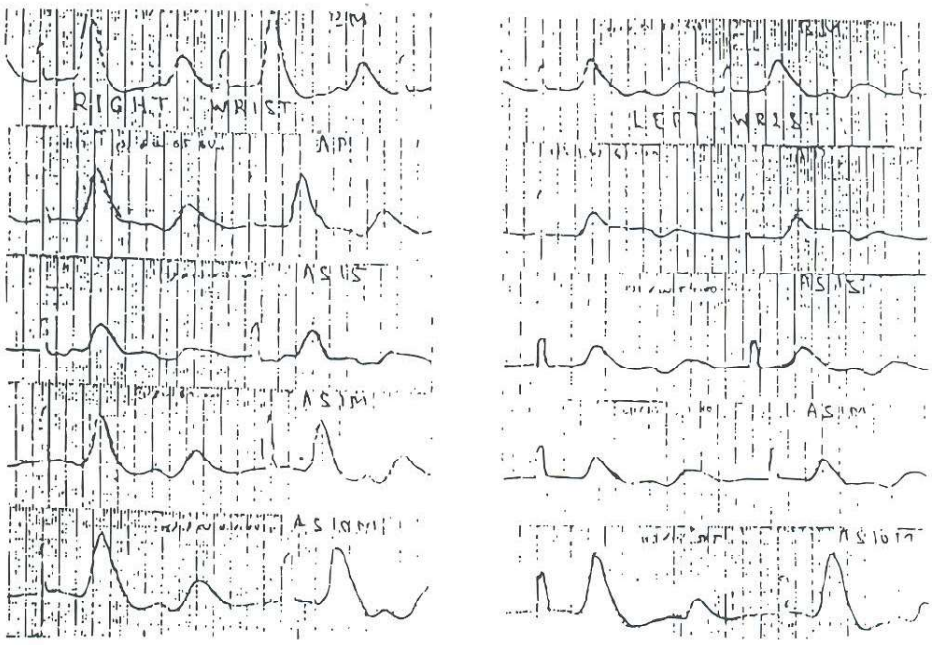

Figure-3 IPG record of left and right wrist before
after administration of potencies of Sulphur

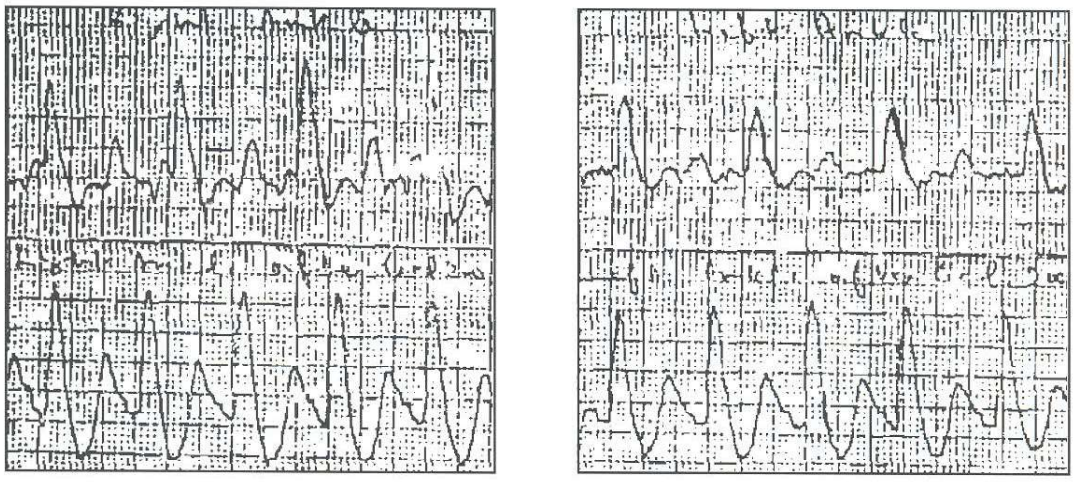

Figure-4 IPG record of left and right ankle before
and after administration of gelsemium 200

for homoeopathy because:-

1. They demonstrate objectively that homoeopathic medicines act.
2. They also demonstrate how selective homoeopathic medicine is when the result of a test is asymmetric. It corrects the blood flow in the affected arm without unduly increasing the blood flow in normal one. Thus, it shows the difference between allopathic treatment which is indiscriminating as far as the side of the body is concerned as it is a chemical treatment and homoeopathic one which is a body response to an imposed signal, and hence is specific to the location of the problem.
3. They show that effect of different medicines and potencies varies with individuals. This may be useful in forming some guidelines for choice of a medicine and its potency.

Aim of these studies is not to show how a cure has been achieved, but to demonstrate that diagnostic methods can be used to understand the action of homoeopathic medicines.

B. PATHOLOGICAL CHANGES OBSERVED DURING HOMOEOPATHIC CURE OF JAUNDICE

Table II gives pathological changes observed during homoeopathic cure of Jaundice. This is a representative blood report for a patient undergoing homoeopathic treatment of Jaundice. Same trend is followed in many cases /11/. As is observed from the report, total bilirubin is marginally above normal value. The patient's conjunctivae were clear, not showing signs of jaundice. Patient had fever, vomiting, and complete loss of appetite. Fever disappeared on the same day when the treatment started, vomiting stopped totally and appetite improved considerably. However, as demonstrated by report on 7th day, there is a 3.7 fold increase in the total bilirubin in the blood. Direct bilirubin increased five fold whereas indirect bilirubin is doubled. But for the general improvement in the condition of the patient and because the patient's parents were already informed in advance about adverse changes in pathology, they did not get alarmed. Conventionally, such a pathological report will be thought to imply the disease to be progressive. Treatment was given only for three days and the patient improved progressively. It is instructive to note that even after three weeks, blood pathology did not come to normal, total bilirubin being more than twice the upper limit in the normal range. Other parameters such as morphologies of RBC, WBC and platelets appeared within normal range all through the period of observation.

Any general physician will be alarmed by looking at such pathological report. But this is a very common scenario observed during curing process. In fact, for one patient, the total bilirubin increased from 2 at the commencement of the treatment to 17 after about a week and doctors advised the patient to be hospitalized immediately. However, this was not done as the patient's husband was intimated in advanced about such an increase and he was convinced that this happens during the process of cure.

Why? It is observed in almost all cases of Jaundice,

TABLE II

Name of the patient: Miss X	Age: 7 years			
Test	Result			Normal value
	Before treatment 21.11.1997	After treatment 28.11.1997	15.12.1997	
S. Bilirubin (Total)	1.5mg/dl	5.6mg/dl	2.1mg/dl	0.2-1.0mg/dl
S. Bilirub. (Direct)	0.8mg/dl	4.2mg/dl	1.1mg/dl	0-0.025mg/dl
S. Bilirub. (Indirect)	0.7mg/dl	1.4mg/dl	1.0mg/dl	0-0.075mg/dl
SGPT	Note done	786 U/L	46 U/L	Up to 40 U/L
Hemoglobin	12,3g/dl	Not done	12.9g/dl	11.5 to 16.5g/dl
WBC (Total)	360/cu-mm	Not done	7500/cu-mm	4000 to 10000/cu-mm

when patient comes with or without pathology, the symptoms such as vomiting and lack of appetite disappear on the very first day on taking the medicines. In fact, when patient comes for medicine, disinterested in any food, a list of dietary items which can be given to the patient has to be handed over because patient starts feeling so hungry that the house wife does not know what to give for eating. The Fever also subsides in a day or two. And then comes the anticlimax. After a couple of days, when the patient is asked to get pathological tests done again because of visible improvement in the condition of the patient, many a time, pathology shows deterioration in the ondition of the patient. Logically thinking, this may be normal. Take for instance, the present case in question, that of jaundice where the liver is involved and is not functioning properly. After administrating the medicine, the liver functions start improving. It discovers that lots of toxins are accumulated. So it has to get rid of those disease products. What is the manner in which it can do so? For any internal organ there is no direct access to excretions. Hence, the disease products are thrown into the blood, from where they are thrown out of the body through normal channels. Hence, the pathological parameters first increase during the process of cure and then slowly reduce. One may give yet another medicine to help the blood toxins to be thrown out fast.

In fact, it is instructive to see how pathological parameters can be deceptive. One patient had jaundice. His father gave him homoeopathic medicine. Blood pathology got cleared in 24 hours. But 15 days later, he was not still feeling hungry. This demonstrates how deceptive pathological examinations can be. Here, the medicine helped the body to throw the toxins out of the blood, without touching the source of disease. After giving the indicated medicine, the patient's appetite improved.

This point will be illustrated by giving more examples. A classic example is that of skin allergies /9/. One girl came with a rash which disappeared within 24 hrs after taking the medicine. However, after 2 days she came complaining of swelling over lips and under eye lids. She was asked to get urine examined. And pus cells ++++ were found in the urine. Again, we see that when the rash disappears from the surface of the skin, it can be done only by reabsorbing the disease product in the blood. These are then thrown out of the body through kidney. Hence, in the process kidney gets involved. At times, it can be overloaded with toxins which it is not able to throw out causing urine infection.

C ULTRASONOGRAPHY AND PATHOLOGICAL TESTS TO UNDERSTAND MODE OF CURE OF UTERINE TUMOR AND OVARIAN CYST

Let us consider one more case which is illustrative /11/. A patient had uterine tumor and ovarian cyst (Table III). During the course of treatment, urine report consistently showed the presence of albumin and pus cells (Table IV). The tumor and cyst disappeared under homoeopathic treatment as shown by ultrasonography report almost a year latter (Table III). And subsequently the pus cells also

TABLE III
ULTRASONOGRAPHY OF ABDOMEN

Patients Name: Mrs. J.		
	Date 30.03.1996	Date 02.02.1997
UTERUS	Appears normal in size and measures 92mm x 44mm x 38mm	Well visualized and appear normal in size, shape, position and texture. Measures 98mm x 43mm x 34mm.
	An echo poor mass seen in anterior wall of uterus and measures 33mm x33mm x 23mm - FIBROID.	No abnormal mass seen in uterus.
OVARIES	A small cyst seen in left ovary and measures 28mm x 19mm.	Both ovaries appear normal.
	There is no evidence of free fluid seen in abdomen.	No abnormal mass lesion or free fluid seen in abdomen and pelvis.

TABLE IV

URINE PATHOLOGY

Patients Name : Mrs. J			
Chemical Examination		Microscopic Examination	
Date 9/7/96			
Sugar	Absent	Epithelial cells	Occasional
Albumin	Present (++++)	Pus cells	Occasional
Acetone	Absent	Red blood cells	Absent
B.S.B.P.	Absent	Casts	Absent
	Crystals	Absent	
Date 5/10/96			
Sugar	Absent	Epithelial cells	Occasional
Albumin	Absent	Pus cells	Occasional
Acetone	Absent	Red blood cells	Absent
B.S.B.P.	Absent	Casts	Absent
		Crystals	Absent

disappeared from the urine, though the pus cells persisted for a while (Table IV).

Thus, we see that:

1. Pathological parameters are bound to increase during any natural process of cure irrespective of the system of medicines adopted for cure or if the cure occurs without medication.
2. The organs such as kidney, liver which get involved because of the toxins thrown out by the body from the location of the disease into the blood stream, need to be treated during the course of treatment so that a balance between toxins released in the blood and levels that can be discharged by the organs without getting overloaded and hence affected, is maintained.
3. The increase in parameters is not due to aggravation of the disease as may be misinterpreted and some times may be labeled as homoeopathic aggravation. It is rather an unavoidable sign of the process of cure.
4. Primary symptoms and secondary symptoms must be well resolved during the course of treatment. If liver is primarily involved, by removing disease toxins from the blood so that the pathology does not show the abnormality, does not cure the disease. At the same time if the liver is improving but the level of toxins in the blood increases alarmingly, these may cause damage to vital parts of the body such as kidney, brain etc. Hence, the removal of toxins must be simultaneously attempted.

In fact, these studies also demonstrate how the cure should be achieved. Pathology or pains which occur due to deposition of toxins can be removed by giving medicines which get rid of these toxins. However, this does not remove the cause of the disease hence the improvement is temporary. The treatment is palliative. If this is followed by giving the medicine which attacks the cause of the disease, again toxins will be released in the blood and will have to be removed. Thus the cure can be achieved by iterative process of attacking the disease and removing toxins from various locations of the body.

7. **Conclusions**

In this articles, we have given plausible physical basis of homoeopathy. We have demonstrated the action of homoeopathic potencies using objective experiments. We have shown that using diagnostic methods to investigate the patients has several advantages:

1. It suggests the way in which cure takes place.
2. It suggests how different medicines attacking different levels of cure need to be given.

3. It suggests difference between palliation and cure.
4. It suggests difference between homoeo athic aggravation and aggravation during the process of cure.
5. These investigations help us to develop confidence in the system of medicines. Remember, the scientific techniques are developed by modern science. Different medicinal systems are used for curing a disease. All diagnostic techniques should be used to understand the science behind these cures by researchers and practitioners of different medicinal systems.

It is hoped that this article will stimulate interest of scientists of all disciplines which will help to develop scientific basis for Homoeopathy.

8. Reference

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