

## Principles of complementary medicine in terms of a suggested scientific basis

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In order to create a scientific basis of complementary medicine it is certainly necessary to add a more non-local approach to the molecular substance of orthodox "life-sciences". It should be able to explain strange phenomena like healing by homeopathy or acupuncture. A possible frame concerns oscillatory electromagnetic interactions as regulatory and – in case of disease – deregulatory impulses of the organisms. These couplings are found, for instance, in biological rhythms, external rhythmical influences (sun exposure, atmospheric disturbances), and vibrations of the body over a huge range of frequencies. One basic example is biophotons and "delayed luminescence".

**Keywords:** Acupuncture meridians, Biophoton regulation, Complimentary medicine, Homeopathy, Regulation dynamics

There are varieties of methods in the so-called "complementary medicine" which are not generally accepted in orthodox school medicine. Some kind of a paradigm of the complementary medicine is the "homeopathy" based on "Hahnemann's" claims of "similia similibus" and the strange postulate that lower the concentration, more efficient is the remedy originated in China and Asia, but during the last century conquered more and more Western countries also. Both these bases of "complementary" medicine miss the working substance in a remedy after certain dilution<sup>1,2</sup>. Homeopathy has found a wide application in Western Europe, the US and India. Another paradigm of complimentary medicine is acupuncture<sup>3</sup>. The scientific explanation of acupuncture belongs to the orthodox fields of obligatory teaching of school medicine at modern universities over the whole world and its methods are subjects of international exchange. Some other useful paradigms are the organ transplantation, genetic engineering, pharmaceutical products and, as a limiting field pointing to some "holistic" approach the so-called psychotherapy. There are already uncountable journals and publications about "orthodox medicine" in which surprisingly, there is also increasing scientific interest in "alternative" medicine even at universities and reputed research institutes over the whole world.

It seems that "complementary" medicine which has in general quite ancient traditional roots is based mainly on experience rather than on rational scientific exploration. It demands a completely new understanding within the framework of ordinary "lifesciences". Only a change of "paradigm" can provide a scientific basis of various "alternative" medical practices constituting complimentary medicine. This does not mean that "school medicine" will ever find a proof of "outsider"-medicine but a scientific basis of complementary medicine should be able to get a deeper insight into the empirically accepted phenomena of orthodox medicine and by no means can be based on contradictions to school medicine. A similar change of paradigms happened between classical and quantum description of physics.

Thus, I like to confine to trials of explanations provided that the experience of "outsiders"—as far as it is not contradictory to orthodox medicine—has to be taken as a fact of the matter. This is in my opinion the only reasonable approach which may bridge the gap between two disciplines with different and sometimes contrary attitudes. My models are based on new insights and sufficiently proven data in lifesciences, i.e. the existence and the coherence of biophotons that are expanding a basic regulatory field within the body of living systems. We like to show that this provision is necessary and sufficient for understanding the most fundamental experience in complementary medicine. Let us introduce this claim by use of a striking example. On an average every

body cell produces about 100,000 chemical reactions per second in order to control the metabolism. For every chemical reaction to take place at least an activated molecule of the reactant compounds is necessary. For this activation at least a photon is necessary, otherwise nothing would happen at all. The process includes the absorption of a photon with suitable activation energy (generally in the visible range) with the right phase for determining activation time. It is claimed that photons responsible for chemical reactions in a cell are biophotons<sup>4-11</sup>. Consequently, biophotons are not only the products of chemical reactions but at the same time – just the opposite – under “biological” conditions their inducers also. The analysis of this situation turns into the contrary of the orthodox explanation. A regulatory electromagnetic field has the determining factors of metabolism including all the following cascades of processes and not individual molecules that are subjected to the electromagnetic control. Photon emission is not only the consequence of excited electronic states, but in turn also the reason of molecular excitation and dynamics. The events may always be the same, but the causality is substantially changed. It is evident that the experimental proof of this direction of causality is as difficult as it is (and was) difficult to show that the molecules are the regulators of their own activities. This basic example already shows that a hypothesis based on the fundamental assumption of electromagnetic regulation of a biological system opens a completely new way of understanding complementary medicine as a mainly non-substantial information transfer rather than as a complicated reaction mixture of stochastically driven biomolecules.

### Basic hypothesis

It is suggested that biophotons over the whole spectral region – from frequencies higher than UV-light, say  $10^{15}$  Hz, down to ULF (lower than 30 Hz) – provide the main signals and physical basis for intra- and intercellular biological regulation. They form a coupled quasi-coherent many-mode electromagnetic (including an acoustic) field, where frequency of a wave or a sequence of frequencies of waves determines the biological (physical) event and amplitude, strength, and sequence(s) of phase determine the timing of the event. The degree of coherence is decisive for the series of relaxation time and information transfer within the network of

reactions. The overall rule of participations of the modes within this many-mode field can be expressed as follows: on the average, the modes occupy the available phase space according to a  $f=1$  –distribution, which corresponds in the optical range to the laser threshold, in the microwave region to the maser threshold, in the radiowave region the raser (radio wave amplification through stimulated emission of radiation) threshold. At the same time, this unspecific mode coupling becomes at any instant rather specific depending on all surrounding influences and internal events including biological rhythms. This mode coupling follows at the same time highest possible sensitivity of the system under study and the most probable and maximum entropy under the boundary conditions of an ideal open system. The reasoning of this approach has been presented in ref. 9.

It is evident that this kind of regulation provides a huge variety of informational processes in living systems, completely different from the common view. Instead of processes based on biochemically understandable complex fundamentals, the subject of observations is a carrier field of electromagnetic interactions that interferes non-locally in a spatio-temporal pattern according to physical laws of quantum coherence and maximum entropy under the constraint of minimizing the number of degrees of freedom. The molecules and their events get controlled mainly by this field, and the field is the non-local electromagnetic blueprint of the boundary conditions. Figure 1 demonstrates an example of this situation. In principle, this configuration of molecular arrangements, a coherent electromagnetic field and its boundary conditions (membranes, bones, fibres etc.) has to be considered as the dynamic regulatory substrate of all living systems. It is evident that this model of understanding biological regulation is not confined to the ordinary picture based on the role of biochemistry for understanding living tissues, but it includes possibilities of understanding hitherto not understandable biological phenomena e.g. disease. Necessary reformations in the model for understanding disease have to seek answers of a variety of questions, e.g. how do virus and bacteria interact with living matter, how do cells communicate in order to regulate cell growth, what are the reasons of differentiation, where does “gestaltbildung” come from, and what is the microscopic mechanism of drug action.

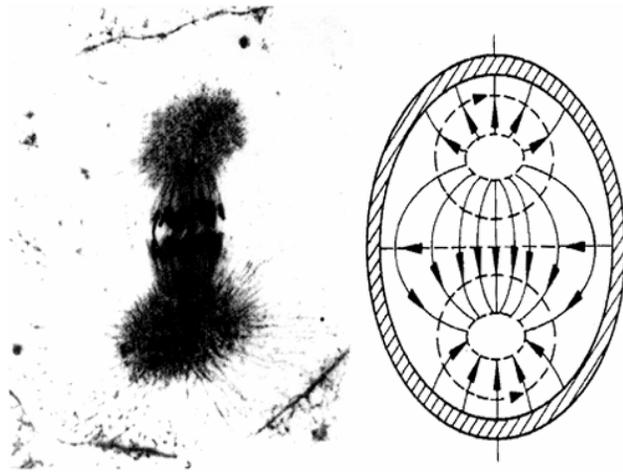


Fig. 1—A: Completely developed spindle apparatus of a fish (*Corregonus*) in mitosis. [From: Darlington, C.D & Lacour, L.F.: *The handling of chromosomes* (Allen and Unwin, London) 1960]. B: Electric field of  $TM_{11}$  cavity modes in a right circular cylindrical cavity. Comparison with Fig.1A shows that mitotic figures are striking examples of long-lasting photon storage and coherent fields within biological systems [From: Popp F.A, Photon storage in biological systems, in: *Electromagnetic bio-information* (Urban & Schwarzenberg, Muenchen-Wien-Baltimore) 1979]

In our hypothesis, the chemical reactivity of drugs takes only a few nanoseconds to die out. This substantial interaction gets decisive in a living system due to its reverberations in terms of long lasting electromagnetic signals and echos which start to interfere with all the present waves and particles, including excitation and de-excitation of biomolecules. The relaxation time of different processes may range from nanoseconds to even days, weeks or months. Biological systems are characterized by their capacity of sudden cooperative reactions as well as “delayed luminescence”<sup>12</sup> which involve super- and sub-radiance, working as nearest-neighbour –interactions as long-distance and long time effects. Consequently, the question of homeopathic efficiency is not a question of a chemical reaction of the substance but the question of the interaction of the remedy with the electromagnetic field of the body including all its contents. This situation is different from key-lock models of simple receptors. It may concern rather unspecific interactions with changes of macroscopic thermodynamical parameters only. However, it cannot be excluded that the homeopathic remedy contains micro-oscillations like solitons by succussion which interfere with oscillations of the permanent regulatory biophoton field within the body. It is likely that

nothing happens at all under general conditions. However, under definite conditions, where resonance-like interference effects may play the most significant role, constructive or destructive interference can amplify or annihilate significant regulatory wave patterns of this body field. These conditions have been considered as a reasonable model of homeopathy, where the remedy works as some specific resonance absorber for awkward regulatory oscillations of the original poison which have been “stored” or “trapped” in the body<sup>2</sup> (Fig. 2). This mechanism is likely to satisfy the “Hahnemann’s” rules, i.e.(i) the “simile-principle” concerning the resonance-interactions of the irregular frequency pattern of the “poison” within the body and its counterpart in the resonance absorption of the remedy, as well as (ii) in the probability of higher resonance tuning in case of increasing number of succussions. This memory based dilution effects have been demonstrated by Klimek *et. al*<sup>13</sup>. There are similar therapy methods which could be based on the same effect, e.g. “bioresonance”, where the destructive interference of reflected wave patterns of the body could be used to inactivate pathological de-regulatory electromagnetic signals of extremely long relaxation times. Similar mechanisms may work in case of the “orgone-therapy” according to Wilhelm Reich where the patient has to be treated in a non-conductive, but also non-equilibrium box of about his size.

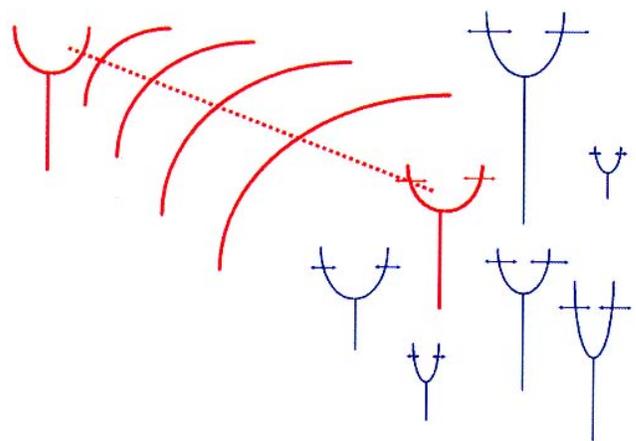


Fig. 2—The tuning fork model of homeopathy: within the regulatory and oscillatory interactions within the living system, there are dis-regulatory ones, originating from poisoning. By means of the homeopathic remedy, these pathological oscillations become absorbed by resonance absorption (destructive interference) due to long living, specifically modulated solitons within the remedy. This model explains the Hahnemann’s rules of Homeopathy

As Brizhik<sup>14</sup> agreed, the non-linear interaction of the electromagnetic body field with highly polarizable biological matter may induce solitons as, for instance, in nerve conduction as well as in case of acupuncture “meridians”. A striking example is the discovery of infrared analysis of the body by Schlebusch *et. al*<sup>15</sup>. Fig. 3 displays the example of the bladder meridian after application of a moxibustion. The “reflexion” of the infrared photons of the moxibustion flame may induce solitons within a channel-like wave guide on the body surface, where an anomalous diffraction plays the essential role. This idea is supported by the presence of cases where “black” solitons which “suck up” the energy of their surroundings and channel-like pattern without excitation of the moxibustion appear. At the same time, the calibrated excitation temperature of the “meridians” is always significantly different from the temperature of a calibrated thermometer.

It is worthwhile to note that “colour therapy” belongs to the methods of complementary medicine. As Lüscher<sup>16</sup> has shown in his fundamental work, there are clear correlations to psychological phenomena. This obvious link between the effects of complementary medicine and the “psychic” situation seem to be one of the most essential bridges of closing the gap between alternative medicine and its scientific exploration. It would be miserable to confine this attempt to disparaging remarks about “placebo”- effects. Rather, just the understanding of the scientific basis of placebo phenomena could get the key of understanding not only holistic medicine but the whole medical treatments at all. Therefore, I

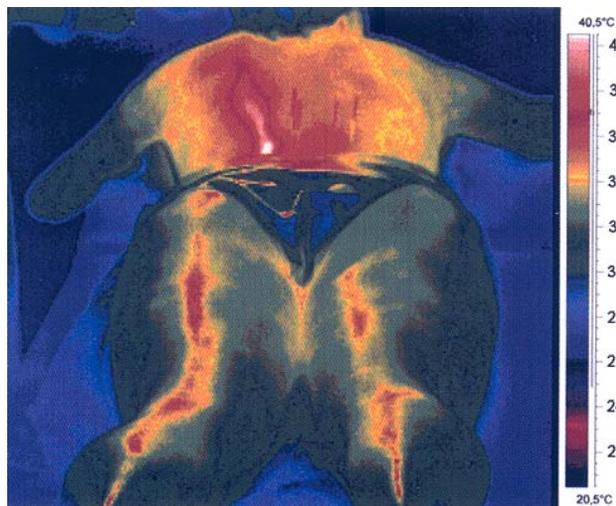


Fig. 3—Documentation of a part of the bladder meridians by moxibustion. They can be described in terms of bright solitons

would like to close this paper with a new diagnostic tool based on the Weber-Fechner law<sup>17,18</sup>. It provides a tool of understanding the connection between physiological and psycho-physical biological phenomena.

### The link via consciousness

Very often the complementary medicine arouses suspicion to be based on placebo effects. This may not be wrong, but the question is whether placebo effects are better understandable than the effects of alternative medicine, and – even more than that – whether medical effects are not at least to a considerable part always placebo effects. Where is the end of the “physiological” process and where the beginning of the “psychological” one. Is it possible to separate these different effects and “mechanisms” at all? The biochemical phase of a treatment – say a drug application – takes probably a few nanoseconds – and the decisive reactions are certainly due to electromagnetic waves (“biophotons”) which are (i) permanently induced by and inducing the metabolism, (ii) originating as well from internal, but also from external influences – we are swimming in an electromagnetic ocean and (iii) controlling and regulating the long-distance and long-time phenomena of the biological functions. There are certainly essential thermodynamic laws which govern the whole relations, where the entropy maximum of an ideal open system is as fundamental as the shrinking of the number of degrees of freedom for getting sufficient orderliness of living structures. Resonance principle certainly plays essential roles there as in ordinary physics. However, one of the goals in understanding all these interactions could (and should) address the healing of sick people, where no limitations should be confined due to whether the treatment is based on established medicine or complementary one, on physiological or psychological interactions, or on material or non-substantial events.

A powerful tool for this purpose is provided by the regulation diagnostics<sup>19</sup> based on the Weber-Fechner-law, i.e. the most fundamental law of physiology, concerning also the psychological background. Biological regulation takes place by electromagnetic interaction within the cells (visible biophoton regime), between cells (infrared biophotons), between organs (radio wave biophotons) and between macroscopic parts of the whole system (ELF-waves). The ideal regulation of all physiological parameters – blood

pressure, tolerability of medicaments, survival time, seeing, hearing, ....., skin conductivity, ... – follows a logarithmic normal distribution, as, for instance, the intensity of sound is measured in terms of decibel according the Weber-Fechner law that the subjective awareness follows the logarithm of the objective intensity. It turns out that the factorial analysis of the conductivity values of the skin, where about 500 randomly measured values of the left and right hand and 500 values of the acupuncture points of the fingers were collected, provides the information of a mainly five-dimensional regulatory “pattern”. It tells us something about (i) the distance of the probability distribution of the conductivity values of the skin from the normal distribution, (ii) the agreement of this conductivity distribution of the acupuncture points with the ideal lognormal distribution, (iii) the left-right-symmetry of the conductivity distribution of acupuncture-points and the stochastic measurements on the whole hand, (iv) the agreement of this conductivity distribution of the whole hand with a lognormal distribution and (v) the mean value of all the conductivity values of the body measurement as a measure of the regulatory activity. In this way one finds five characteristic parameters which explain the most important features of the body regulation. It turns out that they are to some extent capable to explain diseases as well in terms of biological as psychological properties. Take the factor 1 which characterizes the distance of randomness. In case that instead of a lognormal distribution the values are randomly distributed, where the Gaussian distribution of conductivity values shows evidence of it. In this case, the subjects have about a 95% correlation with cancer development<sup>20</sup>. At the same time, it turns out that they are psychologically characterized by over-conformed in the sense to display no individual personality. As in the behaviour as well in the biological structure, the amorphous characteristic gets the indication of a degenerative disease, i.e. cancer. The second factor tells us a lot about the normality of the communication between and within the organ cells. As soon as a strong disagreement to the lognormal distribution gets evident, it can be interpreted as a communication distortion within and between the organs. This property has its counterpart in the fourth factor which is characteristic for the communication and between the connective tissue, since it is based on randomly measured conductivity

values of the palm and not on acupuncture points. The third factor reveals obviously the left-right asymmetry of the body. It plays an important role if one or more focal points (centres of disturbance) are located on the left or right side of the body. Their assessment may get decisive significance for localization of diseases. The fifth factor reveals the activity of the regulatory response of the body. It is simply the mean value of the conductivity values which are correlated to the biophoton intensity within the body. This value is rather low for degenerative diseases including exhaustive states and it increases sometimes to rather high values. Then it indicates either some overshoot of activation energies or even sclerotic diseases (like multiple sclerosis).

In summary, the regulation diagnosis provides a method of holistic medicine in such a way that a connection between kind and degree of an aberration of the whole-body regulation of physiological and psychological function becomes qualitative and to some extent even quantitatively objectified. This is one of the most progressed methods in bridging the gap between conventional and “alternative” medicine. At the same time, this method allows us to investigate the response of the patient on non-invasive therapeutic trials. Thus, a weakness of factor 1 can be treated by meditative techniques, improving the coherence of the body field. The weakness of the second factor may be successfully treated by acupuncture, while the weakness of the fourth factor requires activation of repair functions, e.g. by movement and sports activity. The third factor invites to look for local reasons of diseases, e.g. focal disturbances of the teeth. Energy deficiencies which are indicated by the fifth factor may be treated by excitation or, alternatively by sedimentation procedures depend on whether there is an undershoot or overshoot of regulatory activity. This method tells us that the ancient Greek ideal of keeping the body’s and at the same time the mind’s balance starts to get again the main goal of medical treatment, irrespective of whether one prefers orthodox or integrative methods.

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