

Lecture Series

The Systemic Theory of Living Systems and Relevance to CAM: the Theory (Part III)

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Western medical science lacks a solid philosophical and theoretical approach to disease cognition and therapeutics. My first two articles provided a framework for a humane medicine based on Modern Biophysics. Its precepts encompass modern therapeutics and CAM. Modern Biophysics and its concepts are presently missing in medicine, whether orthodox or CAM, albeit they probably provide the long sought explanation that bridges the abyss between East and West. Key points that differentiate Systemic from other systems' approaches are 'Intelligence', 'Energy' and the objective 'to survive'. The General System Theory (GST) took a forward step by proposing a departure from the mechanistic biological concept—of analyzing parts and processes in isolation—and brought us towards an organismic model. GST examines the system's components and results of their interaction. However, GST still does not go far enough. GST assumes 'Self-Organization' as a spontaneous phenomenon, ignoring a causative entity or central controller to all systems: Intelligence. It also neglects 'Survive' as the directional motivation common to any living system, and scarcely assigns 'Energy' its true inherent value. These three parameters, Intelligence, Energy and Survive, are vital variables to be considered, in our human quest, if we are to achieve a unified theory of life.

Keywords: Systemic Theory – Systemic Medicine – Biological Intelligence – Intelligence Energy and Organization – Synergetics – Adaptogens – Multiple Bidirectionality – Synergic Contribution (SC) – Negentropy

Review of Lectures I and II

Systemic Theory constitutes the philosophical and scientific foundation of Systemic Medicine. It establishes scientific, and ethical, boundaries for a more comprehensive and humane medicine. Its fundamental principles should be known and understood by all health care professionals, independent of their practice, be it orthodox or CAM. In brief, the survival potential or health response of any living system is given by its capacity to generate Energy, Intelligence and Organization. These three parameters—E, I, O—constitute the common denominator of life, and can be represented by a triangle, due to their synergetic interdependency. Enhancing the triangle's components maximizes health. Reducing them, results in loss

of health and eventual death. Moreover, given that chronic degenerative sickness is an outcome of higher systemic entropy, where cancer stems from surpassing a critical entropy level, the way to health requires that we induce negative entropy in patients (Fig. 1).



Figure 1. Life = I + E + O. These three components are life's common denominator.

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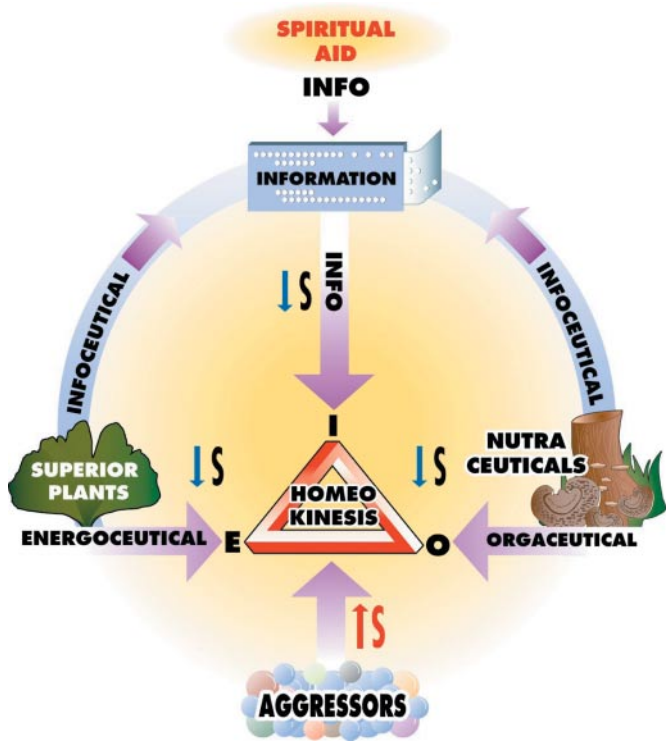


Figure 2. Homeokinesis. The complex dynamic equilibrium of the body is possible thanks to interacting components found in plants, energo, orga and info ceuticals, as well as the negative entropy, information, provided by spiritual healing. The action of these components is necessary to offset aggressors.

Nature’s life fuel, found in many ‘nutraceuticals’ is composed of survival energy and information, necessary to enliven system’s intelligence and organization. Energy (1–9) and information (10) are thus the active principles of life, while negative entropy—healing—is the action mechanism that results. This lays foundations for the Golden Rules of Therapeutics (11,12). This new way of thinking, in biophysics (13), explains active principles and action mechanisms behind, millenary non-iatrogenic, ergoinformational therapeutics. Examples include spiritual healing, kampo; traditional Chinese medicine, ayurveda, unani, etc. and more recently homeopathy and Western energy medicine. It also summons for a new understanding of placebo effect, since the common denominator to all healing is negative entropy. This requires a change of paradigm. As Ernst (14) points out ‘...the placebo effect is an important contributor to the overall therapeutic effect, which should be cultivated rather than eliminated...’ and also questions the ‘unethical use of placebo’ as described in the Declaration of Helsinki. The Systemic Theory is inclusive. It encompasses all medical practice since its laws and axioms are inherent to life. It paves the way to future therapeutics (Fig. 2).

Introduction : The Need for a Biological Systems Theory

The function of the whole is tantamount to the individual action of its parts, due to synergy and emergence, inherent

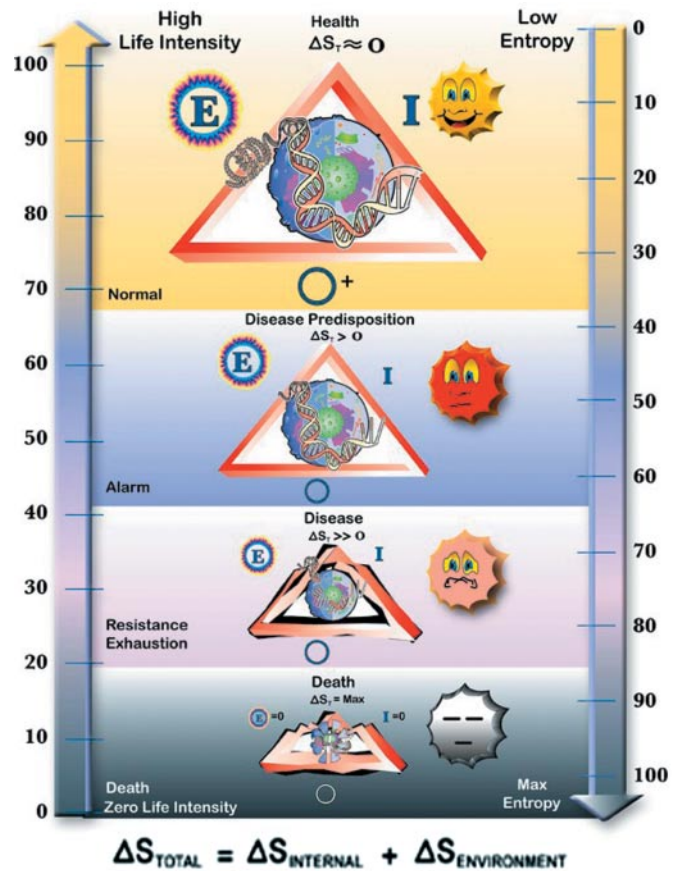


Figure 3. The Health Triangle. The effect of stressors, reduces the health triangle—the survival potential of a living system—from almost zero total entropy ($\Delta S_t \approx 0$) and high life intensity to a level of maximum entropy where death occurs.

characteristics of all living systems (15). Thus, to simplify an organic failure to just one organ—or isolated biofeedback mechanism—is an incomplete approach. Modern pharmacological therapeutics, based on reductionism, is non-organismic. It deviates from treating body, and spirit, as an integrated system; maybe this is why it has become increasingly dehumanized. Some regard traditional forms of healing as unscientific; however, in many ways some of these practices, based on a philosophical system’s approach, are less primitive more scientific (13) and humane than orthodox therapeutics. I do not challenge the precision of modern Western diagnoses which is nonpareil; however, I do question the use, in Western therapeutics, of many harmful drugs—replete in side effects—which are also mostly inefficient in the treatment of chronic degenerative diseases. Observing the extensive use of traditional healing systems in China, India, Indonesia and Japan, to mention a few instances, an impartial observer must acknowledge that there is more to these medicines than wishful thinking. Three billion people treated with holistic systems, with as much success as their Western counterparts compels respect even in the most incredulous (Fig. 3).

Systemic Theory complements the core concepts of ‘far from equilibrium’, ‘self-organization’, autopoiesis, homeokinesis

(16) and dissipative structures by introducing the missing parameters of the life equation: Intelligence and Survival. Without the latter none of the former phenomena would be possible in a living system. According to reasoning, organization, in 'far from equilibrium' systems simply cannot be reached and maintained, without a modulating intelligence and an adaptive energy generator within the system. Intelligence, to be understood, should be defined in terms of a scale of consciousness. In other words, it exists in a gradient scale of awareness, i.e. from the very aware to the unaware. One could propose that humans are conscious of being aware, while an ant or a plant is possibly aware only of its surroundings.

Life presents a variable scale of consciousness. Thus, intelligence, the 'subjective' permeating substance—or field—that enlivens the physical universe, is the vital parameter that should be included in analyzing any system. It accounts for self-organization. Intelligence is the genesis, the causative entity, the central controller. General system theory's (GST's) postulate of 'Self-Organization' (17) is paradoxical and *non sequitur*, since it ignores biological and spiritual 'Intelligence'. GST assumes 'autopoiesis' as a spontaneous phenomenon, excluding a central controller whether spiritual, biological, wavelike, field-form or of any origin. Intelligence, the coordinating entity, is thus missing in GST and also in artificial intelligence theory. This is the entity without which coordinated self-organization simply cannot occur. It is axiomatic.

For any system to survive, there must exist at least one suprainelligence to synchronize each of the 'lesser' intelligences that regulate the subdivisions of the whole. This obviously emergent intelligence enforces the survival goal to all of its lower echelons, unless it becomes deranged. For this reason, it can be assumed that all systems possess an increasing scale of contributive intelligence, from nano to macro systems. In synthesis, without intelligence there can be no living system. Empirical proof of this is chaos as the obverse, flip side, of Intelligence; i.e. Total Chaos = $-I \text{ ad infinitum}$.

Synergetics: Multiple Bidirectional Potential of Tonics and Adaptogens

Before undertaking the concept of Synergetics, and multiple bidirectional potential, the terms tonics and adaptogens must be described. According to Mowrey (18) a tonic is defined as 'any substance that balances the biochemical and physiological events that comprise body systems'. Whereas the term 'adaptogen' introduced by Lasarev in 1947 defines 'a substance of plant origin that is able to increase a non-specific resistance of the organism to stress factors and thereby promote its adaptation to stressful external conditions' (19). But what is synergetics? Synergetics, is the result of information exchange and survival decisions within the living system. It is a complex manifestation of Intelligence. Without Intelligence there can be no synergy. One form of this synergy, known as bidirectional adaptation (18), is triggered by tonic and adaptogenic herbs. Bidirectional adaptation can only be

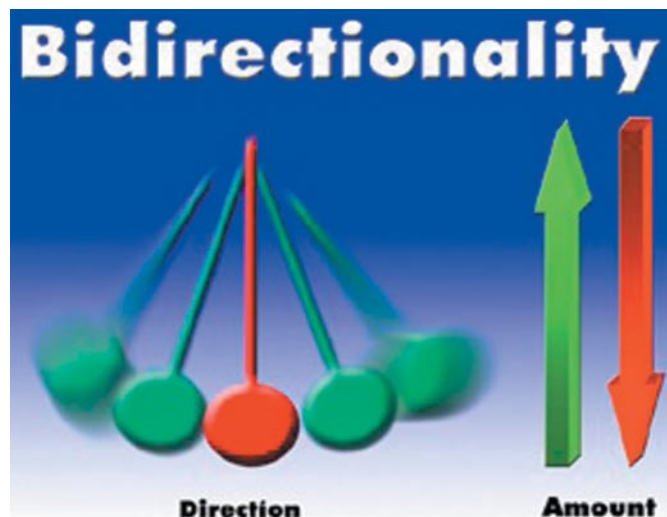


Figure 4. Multiple bidirectionality. The synergy in plants allow for bidirectional adaptation, whether in adjusting direction(s) in multiple or manifold action(s), and/or in modifying the boost or reduction of these action(s).

explained in terms of Intelligence. The informational entity perceives, differentiates, selects and utilizes active principles necessary to achieve homeokinesis in a 'far from equilibrium' system from a massive number of 'ceuticals' present in herbs and nutrients. Thus, '...natural products provide a veritable cornucopia of sources of new CAM approaches that will emerge as important for future applications...' (20) (Fig. 4).

Panax ginseng is a clear example of multiple bidirectionality, whose Rg1 ginsenosides (protopanaxatriol) can stimulate angiogenesis, while its Rb1 ginsenosides (protopanaxadiol) stimulate the exact opposite (21). Also, Rg1 promotes mitosis while Rb1 inhibits it in stimulated human lymphocytes (22). Rg1 stimulates the nervous system, while Rb1 calms (soothes) it (23,18). Finally, *ginseng* has hypertensive and hypotensive properties (24,25). The former illustrates *Panax ginseng*'s potential to induce multiple bidirectional phenomena, i.e. bi-directionality along different metabolic pathways. I have denominated this property 'multiple-bidirectionality'. It is a phenomenon that resembles several pendulums oscillating harmoniously within the same system. The decision of whether to push or pull, the criteria for selecting directions, the pendulum's 'velocity' and other choices are control functions of an intelligence, thus, decision making can only be attributed to system's intelligence. Herein lies unveiled the 'mystery' of homeokinesis.

Many other tonic herbs besides ginseng provide 'infoceuticals', 'nutraceuticals', 'orgaceuticals' and 'energoceuticals' necessary for Biological Intelligence, (BI), to achieve dynamic equilibrium. A very clear instance that, by and large, goes unnoticed is the 'ceuticals' plethora in a balanced diet. This produces immense therapeutic benefits without adverse effects. Such a diet is based on the synergy of ingested components, processed by the BI according to its needs. Mowrey (18) refers to this action as 'specific hunger'.

Thus BI, among other things, processes ‘ceuticals’, and then, computes indispensable solutions for homeokinesis. I would like to point out that the big difference between orthodox and systemic therapeutics is the former does not methodically support BI, while the latter systematically assists its healing mechanisms.

Energy Deficiency and Disease

A common ‘buzz’ word used today in many popular health magazines is ‘body energy’. But how many of those writers or their readers truly grasp the significance and complexity of this expression? An uncomplicated scientific explanation is provided by Antoshechkin (19) who states: ‘The source of energy in the body is oxidative reactions in cellular tissue. Energy supply determining viability and functioning. Energy generation is achieved by: glycolysis, conversion of glucose in lactic acid with ATP formation in cytoplasm; and more importantly, oxidative phosphorylation—ATP synthesis from ADP in mitochondria. ATP, universal energy accumulator and carrier inside cells, used in energy-dependent reactions, is contained in small amounts requiring continuous replenishment. All processes originate from the autonomic energy generation Krebs cycle in each cell. Intensity of energy meta-bolism is regulated by neuroendocrine integrating systems affected by stressors’ (Fig. 5).

Failure in cellular energy metabolism is a common denominator in chronic degenerative diseases. This is where energy plants and ergo-ceuticals (26) acquire importance. Adaptogens support BI in activating and synchronizing both neuroendocrine system and cellular energy metabolism, previously reduced by conditions of illness, physical–mental fatigue and aging. Scientific literature abounds with descriptions of specific biochemical mechanisms of adaptogenic action (19, 27–47). Moreover, failure of cellular energy metabolism

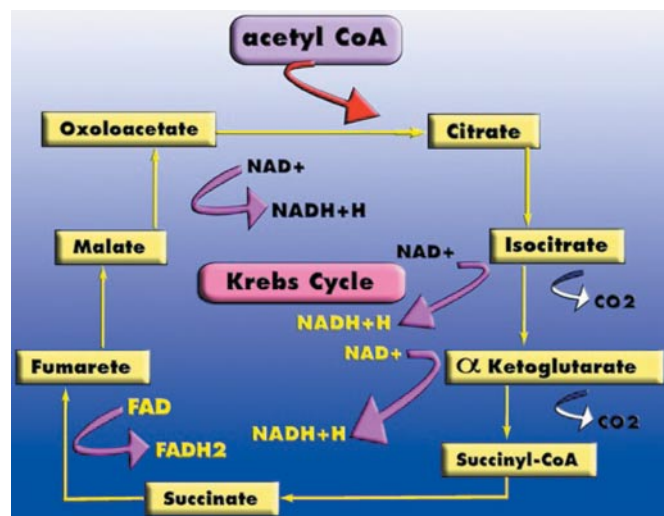


Figure 5. Krebs cycle. The importance of this process cannot be overemphasized. Energy is vital in all life processes be it in complex or in simple systems.

influences the surge of numerous diseases such as Huntington’s (1); Alzheimer’s (2,3); as well as premature aging and age-related diseases in general (4–9) (Fig. 6).

Energy Adaptogens: Key to Chronic Degenerative Disease Management

According to the Golden Rule of Therapeutics (12), at least one of the energy adaptogens listed in Table 1 should integrate chronic degenerative disease protocols.

Each of the former, incidentally, are emblematic ‘National Herbs’ that exude a legendary halo of healing benefits, in keeping with the history and ethnic traditions of the regions where they originate. For instance, the Maral root (*Rhaponticum carthamoides*) from the Siberian Altai region is given to the elderly for revitalization. Traditionally, Maral root was used to treat hunters’ exhaustion in long expeditions. It is also a time favorite of the Russian Olympic team. This herb’s benefits were unveiled by Altai’s indigenous inhabitants while observing the local male deer’s behavior. During the mating season, the male unearths the root and feeds on it while contesting other males for preeminence over the females. The result of this eating habit is increased strength and spermatogenesis (19).

The use of energy adaptogens in all systemic protocols converges with traditional Chinese medicine in its philosophic approach of including a suitable superior herb, as the spearhead, in each of its formulations, for diverse pathologies.

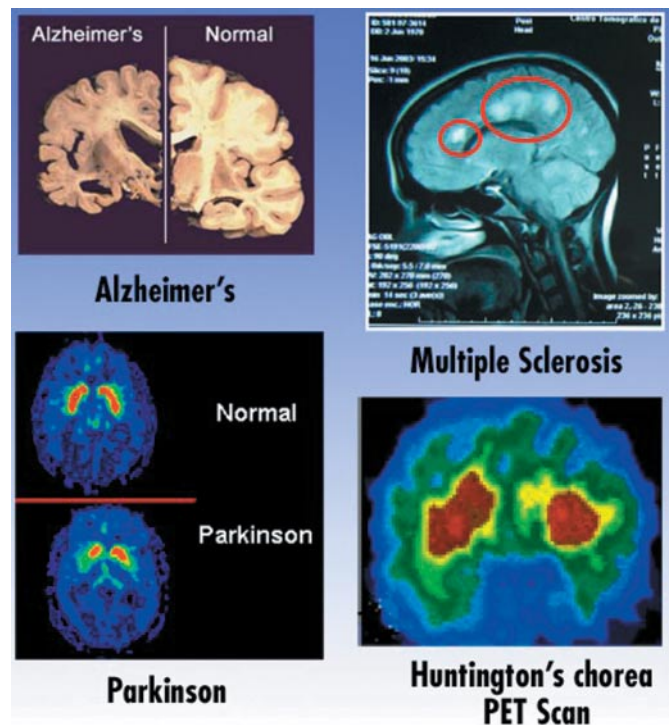


Figure 6. Degenerative diseases linked with energy deficiencies. Examples of energy shortages that bring about chronic degenerative illnesses: Huntington, Alzheimer, Parkinson and multiple sclerosis.

Table 1. Energy adaptogens

Main Effect : ATP Synthesis and re-synthesis	
Targeted Diseases ‘Energy’ Adaptogens specifically target energy deficiency related diseases, such as: Parkinson, Huntington; Alzheimer & Multiple Sclerosis; and in general all Chronic Degenerative diseases. Energy adaptogens – as well as Organizational and Intelligence adaptogens – <i>must</i> be included in all Systemic Protocols.	
<i>Acanthopanax senticosus</i>	Wu, Wang, Li (27) Gaffney, Hugel, Rich (28)
<i>Cornu Cervi pantotrichum</i>	Kim, Choi, Kim <i>et al.</i> (29) Zhang, Wang, Wang, Gao (30)
<i>Ilex paraguariensis</i>	Gorgen, Turatti, Medeiros (31)
<i>Lepidium meyenii</i>	Lopez-Fando, Gomez-Serranillos, Iglesias <i>et al.</i> (32)
<i>Ocimum sanctum</i>	Agrawal, Rai, Singh (33)
<i>Panax ginseng</i>	Ramachandran, Divekar, Grover <i>et al.</i> (34) Yang, Wang, Jin (35) Wang, Yang, Jin (36) Wang, Zhou, Yang (37)
<i>Panax quinquefolius</i>	Ramachandran, Divekar, Grover <i>et al.</i> (34) Yang, Wang, Jin (35) Wang, Yang, Jin (36) Wang, Zhou, Yang (37)
<i>Pfafia paniculata</i>	Kotsiuruba, Bukhanevych, Tarakanov <i>et al.</i> (38) Tashmukhamedova, Almatov, Syrov <i>et al.</i> (39) Kutuzova, Filippovich, Kholodova <i>et al.</i> (40)
<i>Ptychopetalum olacoides</i>	Bucci (41) Siqueira, Fochesatto, da Silva <i>et al.</i> (42)
<i>Rhaponticum carthamoides</i>	Kotsiuruba, Bukhanevych, Tarakanov <i>et al.</i> (38) Tashmukhamedova, Almatov, Syrov <i>et al.</i> (39) Kutuzova, Filippovich, Kholodova <i>et al.</i> (40)
<i>Rhodiola rosea</i>	Maslova, Kondrat'ev, Maslov <i>et al.</i> (43) Spasov, Wikman, Mandrikov (44) Darbinyan, Kteyan, Panossian (45) Shevtsov, Zholus, Shervarly (46) Abidov, Crendal, Grachev (47)
<i>Schizandra chinensis</i>	Antoshechkin (19)

In this sense, there is genuine coincidence between both therapeutic systems. To sum up, the basic purpose for including suitable energy adaptogens in all age-related diseases is to activate or improve deteriorated neuroendocrine and cellular energy metabolism. Table 2 lists the same energy adaptogens' complementary benefits, through the supply of these plants' negative entropy properties, which they provide to the living system's organism.

Multiple Bidirectionality of Complex Tonic-Adaptogenic Formulations

If one superior herb is good, more than one is better. If one synthetic is bad, more are worse. This is an empirical maxim. The reason being that beneficial effects add up just as negative actions do too. BI synchronizes activity and entry point of each natural ‘ceutical’ to achieve stasis, dynamic stability, through the necessary regulatory push-pull of the chemical cascade. Additionally, BI cannot adequately compute—recognize, metabolize and excrete—many lab manufactured synthetics since these are alien to the ontogenetic and phylogenetic evolution of the human species. BI co-evolved and interacted with many genera of the plant kingdom (73,74) and was able to adequately process most of its ‘ceuticals’ (Fig. 7).

Thus the combination of TRUE tonics and adaptogens in one formula, if ingested in normal doses for a given pathology, will not generate side effects or negative reactions. The synergetic constituents induce a multiplicity of syntropic, i.e. bidirectional properties prohomeokinesis. True individual tonic and adaptogenic herbs do not induce side effects in therapeutic dosages, thus their combinations should not either. The empirical proof of this can be found in thousands of herbal formulations found in ancient kampo (75–77), traditional Chinese or ayurveda medicine. These are usually composed

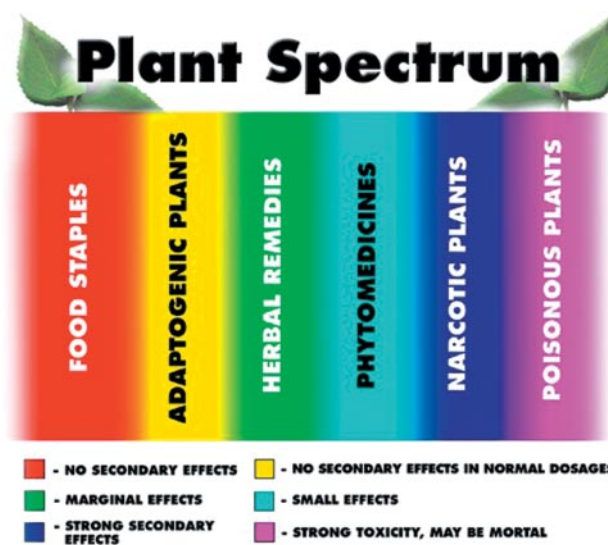


Figure 7. Plant spectrum. The properties of plants are arranged according to their potential action (benefit or harm) when metabolized by a living system.

of at least 15 different phytomedicines. It can also be confirmed in man's harmless but therapeutic (78) consumption of many mixed vegetables, herbs and fruits as part of a balanced nutrition. The empirical maxim can also be said to state that any mixture of innocuous herbs and/or food is harmless. Hard core pharmacologists find this hard to accept since they are trained to think in terms of after effect producing medicines. To them a medicine is not a medicine if it has no entropic side effects. This may well be true for some synthetics, even more so for their combinations, due to their corresponding negative effects. This is not so for true tonics or their combinations (18,79). The proof is food! Moreover,

Table 2. Negative entropy, complementary, effects of adaptogens

Adaptogen	Disease	Complementary effect	Investigators/reference
<i>Acanthopanax senticosus</i>	Parkinson	Cytoprotective	Fujikawa al. (48)
	Coronary heart	Protective	Sui <i>et al.</i> (49)
	Cancer metastasis	Immune stimulant	Yoon <i>et al.</i> (50)
<i>Cornu Cervi pantotrichum</i>	Arthritis	Suppressed arthritis develop	Kim <i>et al.</i> (29)
	Immune	Immune potentiating	Zhang <i>et al.</i> (30)
<i>Ilex paraguariensis</i>	Cardiovascular	Diuretic and hypotensive	Gorgen <i>et al.</i> (31)
	Myocarditis	Cardioprotective	Schinella <i>et al.</i> (51)
	Oral carcinoma	Inhibits cancer cell	Gonzalez <i>et al.</i> (52)
<i>Lepidium meyenii</i>	Male infertility	Spermatogenesis increase	Gonzalez <i>et al.</i> (53)
	Benign prostate hyperplasia	Proapoptotic and antiproliferative	Gonzalez <i>et al.</i> (54)
	Diabetes	Hypoglycaemic activity	Eddouks <i>et al.</i> (55)
<i>Ocimum Sanctum</i>	Heart	Boosts endogenous antioxidants	Sood <i>et al.</i> (56)
	Diabetes	Hypoglycaemic	Gholap and Kar (57)
	Cerebrovascular insufficiency	Neuroprotective	Yanpellawar <i>et al.</i> (58)
<i>Panax ginseng</i>	Diabetes	Improves insulin sensitivity	Liu <i>et al.</i> (59)
	Senility	Neuroprotective	Bao <i>et al.</i> (60)
	Cancer	Chemopreventive and antimutagenic	Panwar <i>et al.</i> (61)
<i>Panax quinquefolius</i>	Diabetes mellitus II	Attenuates post-prandial glycemia	Vuksan <i>et al.</i> (62)
	Breast cancer	Inhibits MCF-7 cancer cell growth	Duda <i>et al.</i> (63)
<i>Pfaffia paniculata</i>	Cancer	Anti-inflammatory	Matsuzaki <i>et al.</i> (64)
	Leukemia	Suppressive effects	Watanabe <i>et al.</i> (65)
<i>Ptychopetalum olacoides</i>	Memory loss	Facilitates memory retrieval	da Silva <i>et al.</i> (66)
<i>Rhaponticum carthamoides</i>	Arrhythmia	Eliminates arrhythmia	Kurmukov and Ermishina (67)
	Diabetes	Insulin sensitivity increased	Kosovskii <i>et al.</i> (68)
<i>Rhodiola rosea</i>	Arrhythmia	Anti-arrhythmic effect	Maimeskulova <i>et al.</i> (69)
	Fatigue	Reduces fatigue	Darbinyan <i>et al.</i> (45)
<i>Schizandra chinensis</i>	Ulcer	Anti- <i>Helicobacter pylori</i> action	Li <i>et al.</i> (70)
	Ischemia	Cardioprotection	Chiu and Ko (71)
	Menopause symptoms	Nitric oxide-mediated vasorelaxation	Lee <i>et al.</i> (72)

not only do we have an absence of side effects but also the synergistic activation of simultaneous regulatory mechanisms—multiple bidirectionality.

Another striking example is the successful systemic herbal formulation—composed of 21 adaptogens and tonic plants—used in diabetic foot, diagnosed for amputation (12). It increases circulation, lowers hyperglycemia, regulates blood pressure, optimizes cardiac function, enhances immunity and energizes the patient, all in one. The maxim is true of most complex herbal formulations, designed to stimulate E, I and O in the living system. The administration of the needed ‘ceutical’ to the hungry metabolic pathway is exerted by the system’s BI, the result is negentropy. In the case of superior herbs, if one is good, more is usually better.

Clinical studies have, for instance, shown that orthodox treatment of chronic cardiac insufficiency with Digoxin—pharmaceutical of herbal origin—can be synergistically enhanced. The secret is to add superior plants that induce vasodilatation and inotropism. Case in point: ‘*Crataegus oxyacantha*’ (80–83) a cardiac tonic, which does not alter the

pharmacokinetic parameters of Digoxin (84), and herbal diuretics like *Hydrocotyle asiatica* and *Equisetum arvense* (18,85,86).

Synergic Healing Potential: Negentropy, Mathematically Expressed

Any adaptogenic or tonic plant, like *Panax ginseng* or *Ginkgo biloba*, has dozens of active principles. Their synergistic combinations (SC) are administered by BI’s regulatory intervention. For instance, if we assume an herb to have 40 different active principles, BI can create 820 SC; however, as in the case of our diabetic foot formula consisting of 21 different herbs each with ~40 active principles, 840 in total, the result is 353, 220 SC. The combinatory expression for SC is: $\sum n = n + (n-1) + (n-2) + (n-3) + (n-4) + \dots + (n-n-1) + (n-n) = (n^2 + n) - \sum n = (n^2 + n)/2$.

$$SC = \sum_{i=1}^n n = \left(\frac{n^2 + n}{2} \right).$$

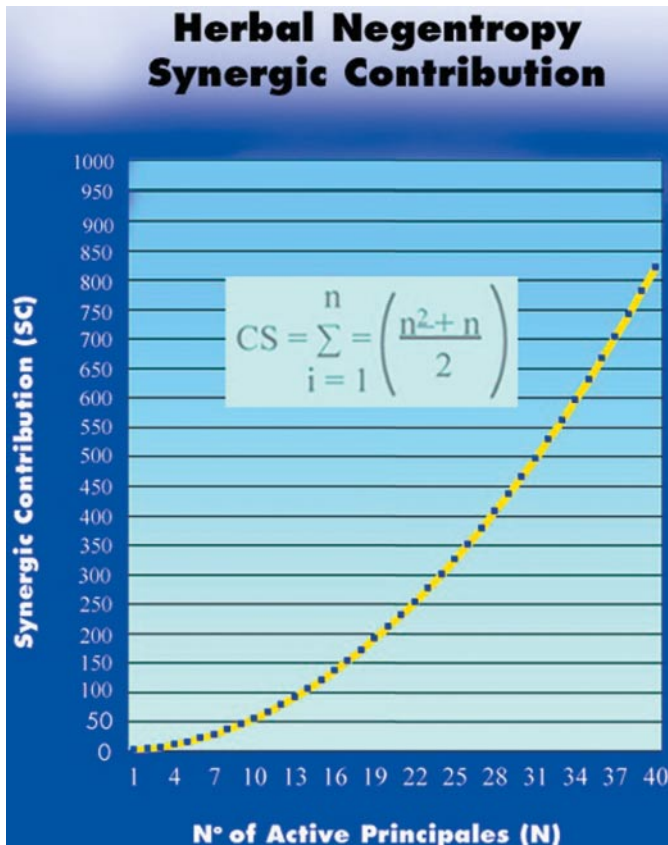


Figure 8. Synergistic contribution. The number of potential synergistic combinations of herbal formulations, in terms of the active principles (n) present in plants, is exponential.

This represents the number of potential contributions of an herbal formula to a system's organization. It is thus a measure of negentropy potential in therapeutic nutraceutical combinations (Fig. 8).

Ideal Medicine Based on Solid Philosophy

How can nature's active principles be specifically designed to aid BI? The answer lies in universal information exchange. Moreover, since a datum, e.g. an herbal informational active principle, only makes sense to the system's 'I', its existence is a self-evident truth. Ergo, 'I' impregnates nature and emanates 'survive' as the fundamental motivation behind self-organization. Thus Energy, pro-survival Intelligence and Organization are the backbone of living systems, and should constitute the core of any healing philosophy or ideal medicine. From their interaction we can now understand spiritual healing and even placebo effect as negentropy therapeutics that enhances system's intelligence via information. In synthesis, ideal medicine based on solid philosophy bridges many gaps, including those between 'China Academy of Traditional Chinese Medicine' and the consulting rooms of Harley Street.

Next Topic

In the next article I shall outline several clinical studies, provide clinical and photographic evidence, and describe the use of 'ideal remedies' according to E, I, O. I will also illustrate similarities and differences between Systemic and other holistic systems such as South Asian systems of medicine.

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