



Entropy and potential energy as a key role of halalopathy in disease prevention and cure

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Abstract: Disease development and curative treatment are complex and poorly understood. Many therapeutic models have been developed to enrich prevention and facilitate cures. Naturopathy uses natural remedies and natural therapies to enrich prevention, while the core of allopathy is a chemical drug rationally designed to adjust the speed of biological functions and facilitate cures. Halalopathy offers a new option for preventing disease by controlling the entropic state and/or facilitating cure by applying the concept of permissible drugs. For this reason, the concept of entropy was introduced as an essential element in disease prevention and cure. The majority of the literature deals with entropy as a result of the disease but rarely introduced as a therapeutic target. This review will further explore the role of entropy and shed more light on the rationalization and implementation of the concept as an essential parameter for prevention and cure.

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Introduction

Humans have evolved with the purpose to civilize the earth and to explore beyond the horizons. As a consequence, humans are constantly adapting and orientating their existence to find ways to fulfill their mission and ensure their survival. A compatible system is maintained in order to ensure sustainability and win the fight against disease (1). The fact that there are many drugs on the market implies the need for rational drug selection and use to enhance the drug's effectiveness. The selection approach is based on choosing the right drug, and dose to be used by the right person and age at the right time (2). In this context, halalopathy was proposed as a new conceptual model to prevent diseases by controlling the entropic state ("a state of disorder") and/or to treat diseases by applying the concept of permissible drugs (3). Higher entropic states cause internal disorders and may waste cellular energy that is in urgent need for cure, whereas the permissible drug establishes a compatible relationship between therapy and the patient's lifestyle. The compatibility between drugs and an individual's lifestyles enhances trust and lowers entropy,

which is essential for activating the placebo effect derived from trust and increasing overall potential energy. The activation of the placebo effect and potential energy, while reducing entropy, creates favorable circumstances for the initiation of the healing process, which cooperates with the prescribed medication and promotes healing towards complete recovery. The curative power of halalopathy is not solely dependent on a placebo effect, the key element, however, is a synergistic effect where each component contributes to the holistic curing process to allow more effective drug. Halalopathy introduced the concept of entropy as an essential element in disease development and treatment (4). Yet, the majority of the literature deals with entropy as a consequence of the disease and employs it as a measuring instrument, but entropy is rarely introduced as a therapeutic target or as a promoter of the disease. In this study, the aim is to further explore and highlight the concept of entropy and potential energy in the context of the human body and to shed more light on the rationalization and implementation of the concept as an essential parameter for cure and prevention.

Entropy and potential energy

Entropy

The term entropy is one of those concepts with a wide variety of descriptions and interpretations that are used in textbooks and often confuse students and teachers (5). Following the concept of entropy, in various textbooks and articles, the concept is often described as a state of disorder, randomness, irregularity or uncertainty. In other interpretations, entropy is described as a form of energy, such as disperse or waste energy, released in the form of heat. Many looks at entropy as unused or waste energy, therefore it is often ignored and considered as energy with less value (6).

Before discussing the concept in detail, it is necessary to summarize the circumstances that could potentially lead to high entropy:

- (I) Generally, entropy is increased when substance change in phase from solid to liquid or gas (7);
- (II) Most of the spontaneous reactions are entropy-driven, particularly when the number of moles in the product is higher than the number of moles in the reactant (8);
- (III) According to the second law of thermodynamic, any change in energy form, part of the energy is released or lost in the form of entropy (9);
- (IV) Entropy increases as molecules diffuse from a high concentration area to a low concentration area. The expansion of the universe is always accompanied by increased entropy (10);
- (V) Entropy increases by increasing temperature and/or decreasing pressure (11).

In all cases, when entropy is increased, many settings have been changed; covalent and non-covalent bonds are broken, the hydrophobic effect is altered, the rigid and native structure is transformed and increased with irregularity, meanwhile, complexity, factuality, and sustainability are lost, water molecules are rearranged, the number of structures, conformations, rotations, microstates, and phases are increased, molecular movements became uncoordinated, random in all direction, therefore it is fair to say entropy creates a new state with the devastating high disorder (12). If micromolecules are involved in the disorder, their movement increases the probability of molecules to collide with each other, such collisions generate heat, ultimately raise the temperature of the closed system, increase the kinetic energy and cause the molecules to vibrate so fast and violently that the strong bonds become

weaker and weak bonds are broken (13).

Entropy is often studied at variable temperature and/or pressure. To gain a deep insight into entropy, it is useful to study changes in phases, reactions, energy forms and diffusion at constant temperature and pressure. Most commonly, this state exists in living systems such as humans, where temperature and pressure remain approximately constant under none-disease conditions.

The human being is a very important biological system, complex but responsive to different states; strong, weak, happy, angry, young, old, healthy, sick. The strength and weakness of entropy are greatly influenced by changes in state, shape, chemical reaction and diffusion. These processes exist in the biological system and play an important role in determining the direction of the process, so it is likely that entropy plays a role in disease development and healing processes (4).

For a better understanding of the entropic role, it is important to define the energy sources and to identify the factors that could lead to the accumulation or depletion of the energy. In this context, energy sources that produce work can be simplified in one form, namely potential energy.

Potential energy

Several forms of potential energy are biologically significant, the strength and the efficiency of the potential energy are strongly connected to entropy, therefore, it can become stronger or weaker based on circumstances affiliated with the form, consequently, it will have an impact on the metabolic processes and immune system (14).

The most important form which is central to all biological process is the potential energy stored in bonds that connecting atoms in the form of molecules (15). In the catabolic reaction, large molecules such as proteins, lipids, carbohydrates (from food), are either broken or hydrolyzed into smaller molecules, this reaction is spontaneous, and proceed from a large molecule with high potential to a small molecule with low potential. As a result, the number of molecules increases and their size decreases, thereby increasing entropy (16). A healthy body regulates these molecules either by excretion or by utilization as macromolecule building blocks. The catabolic process is an important metabolic process and used to produce energy, the reaction is spontaneous with regards to energy demand and entropy-driven.

A second biologically important form of potential energy

is stored in a highly concentrated area. Due to the constant movements of ions and molecules, in the body, substances move from a high concentration area with high potential to low concentration with high entropy. The passive diffusion of substances through membranes produce a solution with more random movement. This movement is entropy-driven, the result is a concentration gradient and diffusion will continue until this gradient has been eliminated. All cells form concentration gradients between their interior and the external fluids by selectively exchanging nutrients, waste products, and ions with their surroundings.

A third form of potential energy in cells is an electric potential, the energy of charge separation in cells. The electrical polarity, with -70 mV resting potential, exists almost in all cells of the body with the exception of nerve and muscle cells. In neurons, action potentials play a central role in cell-to-cell communication. Certain neurotransmitters act as an exciter and promote the generation of large depolarizations by ~ 15 – 20 mV above the resting value of -70 mV to a threshold of about ~ -55 mV. At this threshold potential, the cell membrane opens up allowing Na^+ transport, with complete depolarization, an action potential is generated. Other neurotransmitters act as an inhibitor and prevent the propagation of action potential (17).

Influence of entropy on biological macromolecules

Proteins are essential for living systems and have a high degree of potential energy and information compared to their corresponding monomer (high entropy with less information). Proteins are mainly involved in structural support, transport or communication and act as a catalyst (enzyme) (18). The native state of protein possesses a very high potential energy combined with a very low entropy, very likely due to the distinct restricted conformation (high potential) and lowest atomic rotation (low entropy). The restricted conformation results from strong non-covalent forces, which are due to hydrogen bonding and hydrophobic interactions that compensate for the low entropy of the native state and maintain the shape and integrity of the protein (19).

In contrast, the disordered state caused by a specific stress reaction causes entropy to increase and accelerates the movement and collision of small molecules and triggers heat accumulation (20). The heat can be used to weaken hydrogen bonds and non-polar hydrophobic interactions, thereby enhancing the entropic effects of protein residues,

which ultimately reduces the amount of potential energy. Heat is the main source for the denaturation of proteins and the unfolded state of the protein, exists in many disordered conformations and adopts a random and unfolded coil shape, which is a key feature of high entropy. Denaturation of a protein changes the secondary and tertiary structures, but the primary structure's peptide bonds between the amino acids remain intact. The function of the protein is determined by all structural levels, whereas a denatured protein has depleted its potential energy and therefore can no longer perform the desired function.

Influence of entropy on aging

Aging is a natural process, entropy-driven and manifests as a progressive accumulation of molecules with less potential and altered energy states, result in a biologically inactive or malfunctioning molecule (21). When inert and malfunctioning molecules (such as DNA, proteins) accumulate, they become resistant to catabolic processes and susceptible to post-translational modifications (e.g., oxidation, methylation, acetylation, etc.), cross-linking and aggregation, ultimately becoming resistant to normal recycling mechanisms (22). In recent years, many researchers have investigated the human aging process and concluded that aging is a process where the complexity and fractality of anatomical structures and physiological processes are lost. Entropy was used to quantify the changes in fractality and irregularities (23).

Every reality, influenced by time and comprehend by a human, is limited and has an expiration date. Human is part of this fact; therefore, death is a natural process cannot be avoided (24). Natural death to occur, the body needs to pass through a series of aging processes, those processes could be fast or slow depending on the length and the type of the stressors and diseases human bodies exposed during their daily life. To understand humans' body in the context of entropy, human over time generates disorder which is responsible for having a limit of expiration and critical to life, disease, health maintenance, biologic function, age and eventual death which is the state of maximum entropy (25). Shortly after death, the disorder prevails, osmotic gradients are dissipated. Cells go through a process called necrosis, the "death cascade", swell with water and lyse (26). Numerous hydrolytic enzymes are activated that accelerate the catabolic reaction and start a process of auto-digestion.

Influence of entropy on immune response

The immune system is a network of special cells, tissues, proteins and organs that work together to protect the body from potentially pathogenic infections and diseases. As we age, immune response capability becomes reduced, which in turn contributes to more disease (27). The immune system is complex and contains several different types of cells that respond to different microbes in many different ways. However, it is currently not yet entirely clear by which and with how many cells the system will be precisely boosted. What is clear, the immune system is energy-dependent, and a reduction in energy and resource availability can lead to a significant reduction in immune activity and reduced growth performance (28)

The brain consumes about 20 percent of the body's energy; therefore, the immune system behaves more effectively during sleep, the body distributes energy resources, which are mainly used for the brain and muscles, and the potential energy is then available to build and maintain a healthy immune system (29). Based on the available energy, the immune system can be either in a fight or flight mode. When a huge amount of energy is supplied by the body and consumed by the immune system, fighting mode is activated, and patients left with a restricted amount of stored energy (30). Therefore, during sickness, a dramatic decrease in activity is observed, mainly caused by increased fatigue, reduced physical activity, and a reduced interest in pleasurable activities such as eating and socializing (31). When energy is insufficient, the immune system would prefer to stay in either hunt or flight mode, monitor activities and adapt to the damage unless the damage is very severe, such as viral infections, where human's life is at maximum risk, fighting pathogenic viruses will have top priority (32).

Consuming a balanced diet and eating the recommended amounts of nutrients are an added source of energy, but could be not enough during sickness, particularly if stressors are accumulated, and mental disorder is increased. Psychological stress is an important component with the potential to influence the energy balance, causing a reduction in the immune system's activities (33). However, humans tend to use mental and motivational responses to cope with stressors by practicing mindfulness-based meditation (34).

Cognitive-behavioural therapy helps to reduce the entropic mental disorder and increase the amount of potential energy that can be utilized as an additional energy

source (35). According to halalopathy, the cure is more effective when entropy is reduced. Since potential energy and entropy are well connected, the loss of entropy leads to an increase in potential energy, which in turn acts as an additional source of available energy. As the immune system senses the added energy and if sufficient, the immune system is boosted and activated into the fight mode, along with the appropriate drug, a complete recovery can be achieved. Failure to reduce entropy by the patient may result in overall insufficient potential energy available to activate the immune system, thus, staying in either hunt or flight mode. Cancer is a complex disease in which the maximum possible therapeutic success is to achieve complete remission. Complete recovery unfortunately does not exist in the dictionary of cancer treatment, and if achieved, it is called a miraculous recovery (36). Most cancer patients are in a state of high entropy, either hunt or flight mode, therapeutic drugs will be partially effective, mainly due to the fact that the key role for treatment comes primarily from the immune system (37). To achieve a more effective cure, it is essential to reduce entropy before and during treatment. The reduction of entropy is likely to enrich the potential energy, which in turn may activate the immune system and thus trigger the fight mode.

Influence of entropy on action potential

Thinking is a powerful way to produce ideas, yet having an idea is not enough, however, turning it into reality and making it useful for people is the most attractive trends in thinking. By default, every person is an idea generator, but not every person is an idea translator. To implement the idea, at one hand, individuals are expected to have a rational believe in the idea, on the other hand, a compatible system has to be established, in which the concept of the idea and the process of implementation are mutually interconnected.

The incentive process needs to be activated in order to be potentially excited. The high quality, the interest and the value of the idea will activate the excitatory neurotransmitters, whereas the surroundings and competing sources will activate the inhibitory neurotransmitters. Accumulation and amplification of excitatory neurotransmitters create action potential, otherwise, inhibitory neurotransmitters dominate and prevent the propagation of action potential, eventually, the idea is unlikely to become reality (38). Neurotransmitters are chemical messengers, released by the brain, that allow to communicate with the nervous system and control virtually

all of the human body's functions. Neurotransmitters are usually exciters and sometimes are inhibitors. There are specific enzymes to inactivate each type of neurotransmitter and can last in the body for 5 ms to several min. There are thousands of receptors on every cell in the body (39), and each receptor is specific for a ligand (small molecule, peptide or protein). Each type of emotion (anger, sadness, guilt, excitement, happiness or nervousness) triggers independently its specific neurotransmitters (40).

Types of stressors and durations of stress may elicit different neurotransmitter responses. Stress provides the body with a burst of energy in the form of adrenaline neurotransmitters. Short-term (acute) stress is usually beneficial as it provides the mental awareness and physical attention to escape from a dangerous situation (41). Whereas long-term stress (subchronic and/or chronic) is painful and leads to activation or inhibition beyond the threshold, thus produce either high depolarization (anxiety) or high hyperpolarization (depression), respectively (42–44). It is estimated that about 85% of patients with depression suffer from significant symptoms of anxiety. Similarly, up to 90% of patients with anxiety disorders have depression symptoms (45). Both are disorder states, more resistant to treatment and can lead to a condition of high entropy. Anxiety, prolonged excitation beyond the threshold, in which a biological process such as heart rate, breathing rate, and blood pressure, is accelerated and leads to a higher risk of heart attack and other cardiovascular diseases (46). Depression, the exact nature is still poorly understood but resulted from a prolonged inhibition beyond the threshold. Depression is a state of low potential in which the electrical activity in the brain is slowed down, causing the cells and biological processes to become less active and probably less efficient, thereby increasing the risk of a heart attack and the development of coronary heart disease (47).

Spontaneous processes that do not require potential energy are usually not affected by anxiety and depression. Consequently, the catabolic process (break down process) is either maintained or accelerated. The acceleration of the catabolic process is reflected by an increase in catabolic hormones such as cortisol by patients with prolonged anxiety and depression (48). A non-spontaneous process such as the anabolic reaction (growth process), where potential energy is essential to maintain the process, is drastically slowed down in anxiety and depression (49,50). This is reflected in the reduction of anabolic hormones such as growth hormone, insulin-like growth factor-1 (IGF-1) (51). Adults with growth hormone deficiency are commonly

associated with increased body fat and lower lean body mass, which can be partially related to insulin resistance and reduced IGF-1 activity (52,53). Accordingly, slowing down the anabolic reaction reduces the growth of monomers and macromolecules, while accelerating the catabolic reaction causes the accumulation of less potential micromolecules. Possibly these common effects explain why anxiety and depression can be closely related. This suggests that an imbalance between the anabolic and catabolic hormones is probably responsible for many of the mental and physical disorders (54).

Influence of entropy on epigenetics

Epigenetics is a fast-growing science, shows that, the human is not solely the product of their parents. Growing scientific evidence demonstrates that social and physical environment plays an important role in defining human health status (55,56). Brain development and activities are not genetically programmed, but the potentials are genetically set to interact with thoughts, attitudes, and perceptions (57). The short physiological and psychological adjustment resulted from stress, scarcity or instability, can lead to a source of pathological behavior threaten health and longevity, thus what is set to be temporary state becomes permanent trait (58).

Epigenetics affects human behaviour by gene regulation that is not related to the gene sequence itself, but rather through DNA methylation and histones modification. The epigenetic regulation can affect the growth of neurons during brain development and can influence their activities in the adult brain, thereby exerting a significant influence on the behaviour of the organism (59,60).

Mutations that alter the epigenotype are recognized widely as mutation mechanisms that cause a variety of health issues. Many of those mutations are linked to environmental response (61). Certain acts and behavior are beyond one's control, like childhood events; names, religion, nationality, and parents, whereas others are entirely within human control, such as thoughts, diet, exercise, stress management, and emotional stress.

Upon exposure of cells to a specific neurotransmitter more than others, the new cells, ultimately after cell division, have more of the receptor that matches with the specific neurotransmitter. The bombardment of cells with neurotransmitters from a positive attitude will literally program the new cells to receive in the future more of these neurotransmitters (62). The new generation cells are

produced with more receptors that are compatible with a positive attitude and fewer receptors with a negative attitude, which in turn contributes to positivity (63). Subsequently, positive and constructive thinking endorse anabolic thinking, which in turn enrich potential energy and promote work. Whereas negative and destructive thinking endorses catabolic thinking, which in turn enriches entropy, produces heat and promotes confusion, disorientation, and distraction.

It takes more than a few days for the new performance to be felt, and significant progress can be seen in the long-term attitude patterns. Most of the cells are replaced within one to eight weeks, so a history of anabolic thinking, excitement, optimism or perpetual encouragement, creates the best environment for success, productivity, and high potential. Whereas a history of catabolic thinking, depression, pessimism or perpetual frustration, creates a state of high entropy.

Genetic makeup doesn't determine the human's destiny, meanwhile, the thoughts, attitudes, and perceptions do not alter the genes that borne with human, instead, epigenetics change the genetic activities that affect the hundreds of proteins, enzymes and other chemicals that regulate the functions and activities of cells (64). Epigenetics makes it possible to trace lifestyle practices to the genetic level and proves the indisputable connection between mind (concepts) and body (behaviors).

Influence of entropy on meditation

Many believe, humans mind has more power than one expects to influence physical and mental realities. Mindset is a powerful technique where the mind connects the body with behavior, down to the genetic level and improve mental and physical outcome. Humans cannot control the past but the human brain can shape the present and program the cell for the future and cause certain genes to switch on or off. Meditation is a program made to create a state of calm and deep relaxation through focus the attention on inward to induce anabolic thinking and filter out catabolic thinking (65). Meditation can contribute to reduce the chaotic activities such as stress and help to minimize its effects; headaches, anxiety, and depression (66). Meditation can be practiced through different programs such as yoga, mindfulness, soft music, water and nature sound and pray. All of those activities can lead to increase focus, decrease disorder, release disperse energy in the form of entropy and improve compatibility between mind and body (concept-

behavior). Focus increases the connectivity between mind and reality and concentrates efforts to improve performance and creativity, which in turn suppresses entropy and maximizes cause-effect information. Focus maintains the organization, categorization, and differentiation of concepts, which is essential for optimal behavior that is capable of responding to the environment. Distraction increases the entropy of the cause-effect repertoire and, effectively produces a highly flexible state (highly disordered) with a reduce cause-effect information (67).

Discussion

Entropy and potential energy are well connected, an increase in potential energy leads to a decrease in entropy and vice versa. Potential energy generates in the form of work, while the entropy disperses in the form of heat results from the random collision between molecules. The work is a concerted action of particles, moving in the same direction with relatively few microscopic states. The work is performed on the object and manifests itself in the form of forces, impulses, desires, feelings, and emotions (68). Heat causes random movement in all directions and exhibits many microscopic states. Atoms and molecules are exposed to heat, and their collision with each other is manifested in the form of temperature. The disorder arises when the cause-effect information is minimized, concept-behavior interaction is reduced and the internal compass is lost. The impact of entropy is determined by the length (how long) of the entropic state. Short-term stress leads to a highly flexible state of consciousness with the potential for creative and novel cognition (thinking out of the box). When the entropic state is long, it accumulates, and minimize the cause-effect information, the disordered state can lead to uncontrolled behavior.

The entropic state with long periods is highly disordered, heat accelerates the random movement of atoms and micromolecules, hydrogen bonds are broken and as a result, the random movement of water molecules is increased. Fortunately, water has the highest specific heat, and therefore additional heat can be absorbed by water without a significant increase in temperature. Although such character would limit the drastic effect of entropy, nevertheless many weak bonds, especially hydrogen bonds, are broken, which in turn affects the native structure of macromolecules which include DNA and proteins.

The increase in randomness and loss of information determines the tendency of the system to move towards the

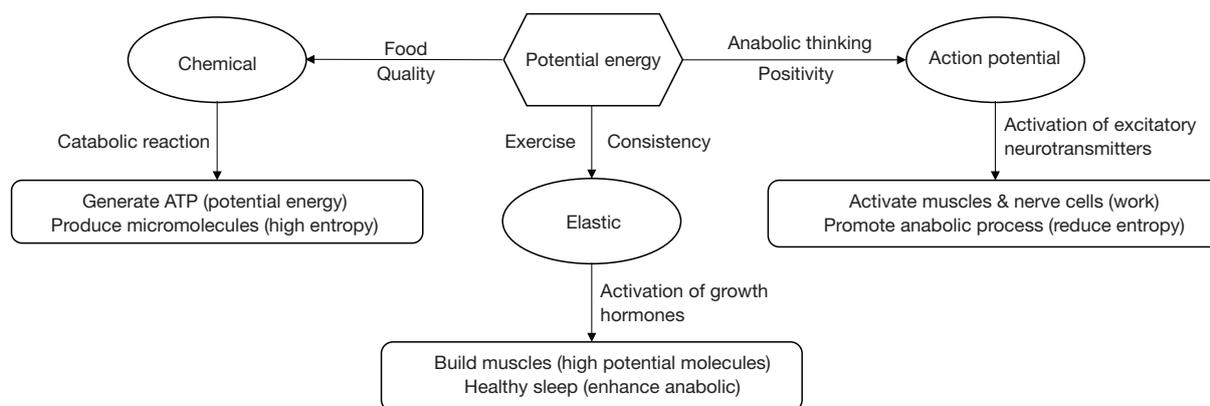


Figure 1 Potential energy sources in the human body.

highest state of disorder. The inevitable increase in entropy over time plays a fundamental role in the aging process, hence understanding its role is important. The aging process is irreversible, yet could be slowed down and ensure healthy aging. Nature tends towards equilibrium, the lowest energy state, whereas life resists equilibrium and tends towards homeostasis (69). To combat aging and restore homeostasis, energy is needed to compensate for the entropic costs, activate growth and promote the anabolic response. Energy costs are high, the consumption and production of energy via the anabolic and catabolic reaction causes wear and tear on the human body, and entropy is generated partly by energy consumption and mainly by the tearing process. As entropy is produced in either case, the aging process is inevitable and cannot be reversed. To reduce entropy in the human body, potential energy needs to be enriched. Reducing entropy activates human growth hormones, increases the immune response, reduces disorders and leads to healthy aging. The sources of potential energy must be diversified, and for that purpose the health management system requires effective management that integrates aspects such as lifestyle “chemical energy”, exercise “elastic potential energy” and anabolic thinking “action potential energy” (Figure 1).

The amount of energy provided by the chemical potential in food is huge, but the catabolic process produces a large number of micromolecules, so mindful eating begins with a change from quantity to quality. The action potential and the elastic potential energy, both have a green aspect, thus need to be strongly enriched, the amount of both sources is unclear, but each source offers an added value to keep the growth hormones active and the immune response supportive.

During sickness, the immune system requires a high amount of energy for an effective response. Clearly, the mind plays an important role in adjusting potential and accelerating recovery. Though anabolic thinking, yoga, acupuncture, homeopathy and meditation reduce entropy and increase potential, experience has shown that people with constructive goals can fight disease more effectively (70). A fighter without a goal is a hunter, patient-based evidence has demonstrated that this statement is true and having a goal and purpose in life activates the fight mode, however, if the mind is not interested in life, the inner potentials are reduced and the immune system is adjusted to stay either in the hunt or the flight mode (71).

The growth hormone is a fasting hormone that is mainly activated during sleep and/or reduced food intake (72). Thus, a further effective measure that may contribute to maintaining the balance between anabolic and catabolic hormones, is a diet control by means of intermittent fasting (73). During fasting, on the one hand, food intake is reduced, which ultimately decreases the breakdown of food, reduces the catabolic process, in turn reducing entropy. On the other hand, lack of glucose and lipid intermediates amplify growth hormone secretion, lower insulin level, thereby promote growth and increase potential energy in healthy man (74). Additional potential energy may strengthen the immune system and enable the cells to initiate cellular repair processes.

Disease prevention can be controlled by adjusting anxiety and depression. Both states are highly disordered and can be regulated by enriching the high-potential state “neither fear nor grief”. This state is also called a tranquility state, where it might emerge either from anxiety through the stimulation of relaxing/inhibitory neurotransmitters

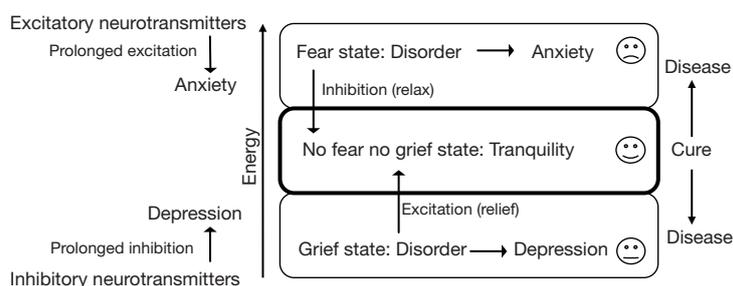


Figure 2 Disease prevention pathway.

or from depression through the stimulation of excitatory neurotransmitters (Figure 2). Focusing activities such as meditation can contribute to reduce the chaotic activities and help to minimize the effect of anxiety and depression. Focus increases the connectivity between mind and reality and concentrates efforts to improve performance and creativity, which in turn suppresses entropy and maximizes cause-effect information. According to halalopathy, the concept of disease prevention and control is effectively promoted when individuals share holistic values (75). Halalopathic values are four, namely: material, human, spiritual and moral values. The material value represents a rationally designed and qualified drug that ensures the value of the therapeutic effect. The human value aims to build trust between patient and doctor, the positive expectation is a key process for the placebo effect. The spiritual value is based on the need to create a state of no fear and no grief, such a state develops calm and a state of high potential. The moral value is based on the connection of the drug with the patient's lifestyle, this connection creates a compatible and highly ordered system.

Conclusions

Entropy is one of these concepts with a wide variety of descriptions and interpretations that are often confusing for the students and difficult to explain for the teacher. Potential energy is needed to compensate for the entropic costs, restore homeostasis, activate growth hormones and promote the anabolic response. Entropy plays a fundamental role in regulating potential energy, accelerating the aging process, stimulating the immune response, tuning action potential, influencing epigenetics, whereas entropy is reduced by activities such as meditation, yoga and mindfulness. Potential energy sources are mainly; chemical "food", elastic "exercise" and action potential "anabolic

thinking". In order to achieve a better curative treatment, it is necessary to reduce entropy and enrich the potential energy, which in turn serves as an additional source of available energy. As the immune system senses the added energy and, if sufficient, the immune system is boosted and activated into the fighting mode, these are the favorable circumstances that work cooperatively with the prescribed therapeutic drugs to promote the healing process towards complete recovery.

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Footnote

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Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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