

Quantum Nutrition And Health Sustainability

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Introduction – The Basis of Quantum Nutrition and Sustainability of Health

Introduction to Quantum Nutrition

Quantum nutrition, unlike modern nutrition science, is an approach that considers the energy dimension of the human body and the universe. Traditional nutrition science typically focuses on macro and micronutrients, calories, and metabolic functions (Capra, 2010). However, quantum nutrition goes beyond these to examine dimensions such as energy, frequency, and biophoton information. Therefore, in quantum nutrition, matter, energy, and information are considered together (Schrödinger, 1944).

The human body is not only a chain of biochemical reactions but also an electromagnetic system. Every cell, every organ, and every thought emits a specific vibrational frequency. These frequencies determine both bodily energy distribution and mental and emotional balance. Quantum nutrition aims to balance these frequencies (Popp, 1999).

Therefore, three important dimensions stand out in quantum nutrition:

1. Article Dimension: Classic nutrients and metabolic functions.
2. Energy Dimension: Vibrational frequency of foods and their effect on body energy.
3. Information Dimension: Biophotons and the capacity of nutrients to carry life information

Continuity and Protection of Health

Maintaining health isn't just about preventing disease; it also involves maintaining cellular, mental, and emotional balance. The quantum nutrition approach ensures this balance through three fundamental mechanisms:

1. Optimizing Cellular Energy: Mitochondrial activity, ATP production, and free radical balance. High-frequency foods support cellular energy production.
2. Balancing the Energy Field: Electromagnetic pollution and stress can disrupt cellular ionic balance. Grounding, mineral balance, and consuming living water

stabilize the energy field.

3. **Biophoton Information Flow:** Fresh, natural, sunlight-grown foods are recommended to strengthen intercellular communication. These foods increase the exchange of energy and information between cells.

The goal of quantum nutrition is to improve the health and quality of life by harmonizing the physical, mental and energy fields of the individual (Szent-Györgyi, 1941). The energy field can be distorted by stress and electromagnetic charges, so balancing techniques are important (Cifra et al., 2011).

Nutrition and Energy Relationship

Foods are not only substances that perform metabolic functions; they are also carriers of vibrational energy. The frequency of a food depends on factors such as the minerals of its growing environment, sunlight exposure, and water quality. For example, fresh fruits and vegetables have a high frequency (~70-90 MHz); sprouted seeds and foods containing live enzymes have a high frequency (~80-100 MHz); cooked, processed foods have a low frequency (~5-15 MHz); refined sugars and processed oils have a nearly zero frequency. These differences directly affect the body's energy field. High-frequency foods accelerate cellular communication, while low-frequency foods can lead to energy blockages and metabolic slowdowns (Popp, 1999).

Thought, Intention and Energy Field

Intention is crucial in quantum nutrition. Dr. Masaru Emoto's studies on water crystals have shown that water is sensitive to emotion and thought. Because the human body is composed of 70% water, one's emotional state during eating directly affects one's energy field: food eaten with love and gratitude has healing effects at the cellular level, while food eaten with guilt or anger disrupts the energy field and has toxic effects. Therefore, quantum nutrition encompasses not only "what you eat" but also "how you eat" (Emoto, 2004).

Scientific Basis for Quantum Nutrition

Quantum nutrition is based on biophoton theory, quantum biology and electromagnetic energy field research:

- Fritz-Albert Popp (1981) discovered that living cells emit light and showed that this light is a biophoton.
- Mitochondrial Electron Transfer: Provides energy efficiency through quantum tunneling mechanisms.
- Neuronal Communication: Quantum entanglement and electron tunneling speed up synaptic transmission.
- Plant and Nutrient Frequency Measurements: High frequency nutrients measured by spectroscopy increase cell energy production (Hameroff & Penrose, 2014).

Quantum Physics: Basic Concepts and Quantum Tunneling

Fundamental Principles of Quantum Mechanics

Quantum physics is the branch of science that studies the behavior and interactions of subatomic particles. The laws of classical physics describe the motions of the macroscopic world, but at the atomic and subatomic levels, probability, energy quanta, and wave-particle duality come to the fore. The fundamental principles of quantum mechanics are:

1. **Wave-Particle Duality:** Particles exhibit both wave and particle properties. Electrons, photons of light, and even atoms exhibit this behavior. This is effective in processes such as electron transfer and synaptic transmission in biological systems.
2. **Superposition:** A particle can exist in more than one state simultaneously. Superposition is observed in quantum biological processes such as enzyme activity and mitochondrial energy production.
3. **Quantum Entanglement:** Distant particles can instantaneously share information despite being independent of one another. This phenomenon is a debated topic, particularly in processes such as cellular signaling and hormone transfer.
4. **Quantum Tunneling:** A particle that cannot overcome energy barriers can pass through the other side of the barrier thanks to the tunneling effect. This is a critical mechanism in the electron transport chain, photosynthesis, and some enzyme reactions (Penrose, 1999; Schrödinger, 1944; Hameroff & Penrose, 2014).

Biological Significance of Quantum Tunneling

Quantum tunneling plays a direct role in intracellular energy production and metabolic processes:

- **Mitochondrial Electron Transfer Chain:** Electrons overcome energy barriers and enable the production of ATP.
- **Enzyme Catalysis:** Quantum tunneling makes it easier for reactant molecules to overcome energy barriers.
- **Photosynthesis:** Plants convert light energy into chemical energy with maximum efficiency through quantum tunneling.

Quantum tunneling allows energy barriers to be overcome in a way that defies the laws of classical physics (Schrödinger, 1944). This mechanism plays a role in the mitochondrial electron transport chain, ATP production, and photosynthesis (Cifra et al., 2011).

Quantum Entanglement and Human Biology

Entanglement allows distant particles to instantly exchange information. In the human body, entanglement can potentially affect:

- **Neuronal Transmission:** The flow of information between synapses is accelerated.
- **Hormone and Signal Transmission:** Instant coordination of distant cells is

achieved.

- **Energy Field Balancing:** Physical and mental harmony is supported by the entanglement effect.

Quantum entanglement enables instantaneous information transfer between distant particles (Einstein, Podolsky & Rosen, 1935). This phenomenon is one potential explanation for neuronal communication and signal coordination in biological systems (Hameroff & Penrose, 2014).

Quantum Mechanics and Nutrition Relationship

Quantum effects play a critical role in our understanding of the energy and information dimensions of food:

1. **Electron Transfer and Antioxidants:** Electrons in foods protect cells by interacting with free radicals. Quantum tunneling increases the efficiency of this electron transfer.
2. **Photo and Biophoton Interaction:** Fresh, natural, and sunlight-grown foods contain high levels of biophotons. This light optimizes information transfer between cells.
3. **Vibrational Frequency and Energy Field:** Every food has its own vibrational frequency. Quantum mechanical effects synchronize the body's energy field with the food frequencies.

Electron transfer, antioxidant interactions, and biophoton behavior operate at the quantum level (Popp, 1999). It is thought that high -biophoton nutrients may enhance cellular communication.

Quantum Tunneling Examples

Table 1

Quantum Tunneling Examples

Period	M o l e c u l a r Mechanism	Quantum Role	Nutrition Connection
ATP production	Electron transfer	Tunneling	High-frequency foods increase energy production
DNA repair	Proton tunneling	Mutation prevention	Supports antioxidants and alkaline water
Synaptic transmission	Electron superposition	Fast information transmission	Omega-3 and phospholipids support frequency

Electron tunneling in ATP production (Cifra et al., 2011). Proton tunneling in DNA repair. Electron superposition in synaptic transmission (Hameroff & Penrose, 2014).

Quantum Physics and Health Perspective

Quantum biology is revolutionizing our understanding of human health. Cellular

metabolism operates not only chemically but also at the energy and information level. The electromagnetic environment (Wi-Fi, cell phones) can influence the energy field; quantum understanding defines balancing strategies. Quantum awareness is directly related to nutritional choices and lifestyle.

Quantum physics:

- Explains the energetic basis of the universe at the subatomic level.
- Quantum tunneling optimizes biological energy production and metabolic processes.
- Entanglement and superposition accelerate cellular communication and information transfer.
- Nutrition interacts with quantum effects at the energy and information level.

Quantum biology emphasizes the importance of quantum effects in cellular metabolism and energy production (Szent-Györgyi, 1941). Electromagnetic environmental conditions can affect cellular frequencies.

Quantum Nutrition – Basic Principles

Definition of Quantum Nutrition

Quantum nutrition is a holistic approach that evaluates foods not only in terms of calories, vitamins, and minerals, but also in terms of energy, vibration, and information. This approach integrates the biochemical and energetic effects of nutrition.

The fundamental principle of quantum nutrition is: “Every food interacts with our cells on both a physical and energetic level; high-frequency and conscious consumption optimizes health.” This principle operates on three levels:

1. Item Dimension: Macro and micronutrients, metabolic functions.
2. Energy Dimension: Vibrational frequency and electromagnetic compatibility.
3. Information Dimension: Biophotons and nutrients transfer life information.

Quantum nutrition is defined as a holistic approach that evaluates foods not only in terms of calories and nutrients but also in terms of energy, frequency, and information (Popp, 1999; Capra, 2010). In this approach, every food is assumed to have three layers: matter, energy, and information (Schrödinger, 1944).

Energy and Frequency in Quantum Nutrition

Foods affect body energy not only through their molecular structure but also through their vibrational energy. Each food acquires a unique frequency due to the minerals, water structure, and sunlight of the environment in which it grows. Frequency differences demonstrate how foods affect the energy field. High-frequency foods accelerate communication between cells, while low-frequency foods can create energy blockages. The vibrational frequency of foods varies depending on the minerals, sunlight, and water

structure of the environment in which they grow (Popp, 1999).

Information Dimension of Foods: Biophotons

Fritz-Albert Popp's research, living cells emit biophotons, and this light serves as a means of transmitting information. This flow of information enables coordinated cell function. Foods with high biophotons include sun-ripened fruits and vegetables, organic sprouts, and foods with low biophotons, such as foods heated in microwaves and processed foods for extended periods. The importance of biophotons lies in optimizing cellular communication, balancing the energy field, and supporting metabolic functions. Fritz-Albert Popp Biophoton research shows that living cells emit ultra-weak light and that this plays a role in biological communication (Popp, 1999; Cifra et al., 2011).

Matter Dimension in Quantum Nutrition

The matter dimension is the domain of classical nourishment. However, in quantum nourishment, this dimension is integrated with the dimensions of energy and information.

1. Carbohydrates: A source of energy for cells. However, refined carbohydrates can cause electron loss and lower energy frequency.
2. Proteins: Amino acids build muscle tissue and enable the production of neuropeptides. Communication between neurons is accelerated by quantum effects.
3. Fats: Omega-3s and phospholipids keep cell membranes flexible. They are critical for neural frequency transmission at the quantum level.
4. Vitamins and Minerals: Play a role in electron transfer. Ionic conductivity optimizes energy flow.

Carbohydrates, proteins, fats, vitamins, and minerals are fundamental components of classical nutritional science; however, in the quantum approach, they are considered together with cellular energy flow and electronic communication (Szent-Györgyi, 1941). Phospholipids in the structure of the cellular membrane are reported to play a critical role in neural frequency transmission.

Energy Dimension in Quantum Nutrition

The energy dimension examines the vibrational frequency of foods and their cellular resonance effects. High-frequency foods increase cellular energy production and strengthen immunity. Low-frequency foods lead to low energy, mental dullness, and metabolic blockage. For example:

- Spinach and broccoli → Increases the energy field
- Refined flour foods → Lowers the energy field

High-frequency foods support cellular energy production and immunity, while low-frequency foods can lead to energy blockage (Cifra et al., 2011).

Information Dimension in Quantum Nutrition

The information dimension relates to biophotons and the life information in nutrients. According to quantum biology:

- Communication between cells occurs in the form of light.
- Foods grown with sunlight are rich in biophotons.
- Foods heated in the microwave lose this information.

Table 2

Biophoton Density of Foods

Food	Natural (Sun)	In the greenhouse	Microwave
Tomatoes	Very High	Middle	Low
Spinach	High	Middle	Low
Carrot	High	Middle	Low

Biophoton density is a determinant of cellular information transfer (Popp, 1999). Sun-grown vegetables and sprouts contain high biophoton, while processed foods contain low biophotons.

Application Principles in Quantum Nutrition

1. Consuming fresh and organic food: Provides high frequency and biophoton support.
2. Alkaline water and mineral balance: Optimization of cellular pH and energy.
3. Eating slowly and consciously: Intention is important for the energy field and biophoton flow.
4. Mindfulness ritual: Gratitude and positive intentions at mealtime support the energy field

Basic principles of quantum nutrition:

- Article Size: Classical nutrition and metabolic functions.
- Energy Dimension: Vibrational frequency and energy effect of foods.
- Information Dimension: Biophoton and life information transfer.

Consuming fresh and organic foods (Popp, 1999), alkaline water and mineral balance (Cifra et al., 2011), eating slowly and consciously, regulating the energy field with intention (Emoto, 2004) are integrated with the harmony of these three dimensions, physical health, energy field balance and conscious awareness.

Human Energy Field and Electromagnetic Effects

Definition of the Human Energy Field

The human body is not just a biological machine; it is also a dynamic system surrounded by an energy field. This energy field is a combination of electromagnetic waves vibrating at various frequencies (Popp, 1999).

- Aura: The visible or measurable energy layer surrounding the body.

- Chakras: Energy centers affect organs and emotional states.
- Meridians: Energy pathways defined in Chinese medicine; directly linked to nutrition and electromagnetic interaction.

The aura, chakras, and meridians have been identified as fundamental components of energy flow (Oschman, 2000). This energy field is directly related to cellular communication, hormone activation, and nervous system functions (Cifra et al., 2011).

Electromagnetic Frequencies and Body Energy

Every organ and cell vibrates at a specific frequency. These frequencies are affected by environmental electromagnetic fields.

Every organ vibrates at a specific frequency; the heart operates in the range of 0.8–1 Hz, and the brain in the range of 4–40 Hz (McCraty et al., 2009). Electromagnetic fields emitted from electronic devices can affect cellular ion balance and energy frequency (Pall, 2013).

Table 3

Electromagnetic Frequencies and Body Energy

System	Natural Frequency (Hz)	External Influences	Conclusion
Heart	0.8–1.0	Stress, Wi-Fi	Irregular rhythm, decreased energy
Brain	4–40	Screen light, electromagnetic field	Loss of concentration, sleep disturbance
Eyebrow	10–15	Mobile device use	Loss of energy, fatigue

Electromagnetic Loads of Modern Life

Cell phones, Wi-Fi, magnetic resonance devices, and artificial light are the primary factors that affect the energy field. These effects include:

- It disrupts the ion balance in the cell membrane.
- It creates energy blockage.
- It is associated with chronic fatigue and mental fog.

Suggested balancing strategies:

1. Earthing: Contact with the ground with bare feet for 10–15 minutes.
2. Mineral support: Ion balance is achieved with magnesium, potassium and zinc intake.
3. Living water consumption: Natural Spring water in glass bottles.
4. Adaptogen herbs: The energy field is protected with Ashwagandha, ginseng and reishi mushroom.

Wi-Fi, cell phone radiation, artificial light, and magnetic fields can disrupt the energy

field. This can lead to cellular stress, sleep disturbances, and low energy levels (Pall, 2013; Reiter et al., 2014). Grounding has been scientifically shown to balance the energy field by regulating ion balance (Chevalier, 2012).

Human Energy Field and Nutrition

Nutrition affects not only the metabolic but also the energy field:

1. High frequency nutrients: Increases cellular energy production.
2. Low frequency foods: Creates energy blockage and frequency drop.
3. Biophotons: Optimizes information transfer between cells.

Example:

- Green leafy vegetables and sprouts → Strengthens the energy field.
- Refined sugar, alcohol → Causes low energy and congestion.

Foods carry not only chemical but also electromagnetic information (Popp, 1999). High-frequency foods strengthen the energy field, while processed foods can lower the frequency (Cifra et al., 2011).

Electromagnetic Balance and Nutrition Interaction

To understand the relationship between nutrition and the energy field, the minerals magnesium, zinc, and potassium maintain balance between the cell membrane and the energy field. Alkaline water increases pH balance, ionic conductivity, and supports frequency matching. Adaptogen plants protect the energy field and combat electromagnetic stress. Minerals such as magnesium, potassium, and zinc regulate ionic communication in the cell membrane (Wallace, 2013). Alkaline water increases pH and ionic conductivity, thus balancing the energy field (Tanaka et al., 2016).

Quantum Nutrition Perspective

Quantum nutrition enables the integration of nutrition with the energy field; foods with high energy frequencies increase the energy field. Biophotons support the flow of information between cells. Alkaline water and minerals provide electromagnetic harmony. Thought and intention: Increases or decreases the energy effect of foods.

- The human body is a dynamic energy field and its frequency is shaped by nutrition, environment and emotions.
- Modern electromagnetic charges can disrupt the energy field
- Quantum nutrition maintains health by optimizing the energy field and nutrient frequency.

Quantum nutrition addresses health in a holistic way by bringing together the energy field, biophoton communication, circadian rhythm and electromagnetic balance (Capra, 2010).

Quantum Properties of Food – The Trinity of Matter, Energy and Information

The Trinity of Matter, Energy and Knowledge

One of the most important concepts of quantum nutrition is that every food has a three-layered structure:

1. Matter Dimension (Physical Nutritional Value)
2. Energy Dimension (Vibrational Frequency)
3. Information Dimension (Biophoton and Life Information)

These three dimensions work together to influence both biochemical metabolism and the electromagnetic energy field. This approach is based on the foundations of biophoton theory and quantum biology (Popp, 1999; Cifra et al., 2011). Schrödinger's explanations of the physical basis of life emphasize the importance of energy and information flow in living systems (Schrödinger, 1944).

Item Dimension (Physical Nutrition)

The substance dimension encompasses the macronutrients and micronutrients studied in classical nutritional science. This dimension determines the body's basic building blocks and energy production processes.

- *Carbohydrates*: The primary energy source for cells. Complex carbohydrates are digested slowly and provide sustained energy, which is associated with sustainable energy production. Refined carbohydrates, on the other hand, cause rapid energy spikes and dips, as well as electron loss and low frequency. provides cellular energy; complex carbohydrates (Szent-Györgyi, 1941).
- *Proteins*: Amino acids don't just build muscle tissue; they also play a critical role in the production of neuropeptides, which enable communication between neurons. Amino acids such as tryptophan and tyrosine support the synthesis of neurotransmitters such as serotonin and dopamine.
- *Fats*: They are essential elements in cell membrane structure. Omega-3 fatty acids are critical for neural frequency transmission. Phospholipids increase cell membrane flexibility, optimize ion transport, and support quantum energy flow.

Vitamins and minerals play a role in electron transfer and redox reactions. They provide ionic conductivity and regulate cellular energy flow. For example, magnesium and potassium optimize ATP production, while zinc and selenium support antioxidant defenses. Omega-3 fatty acids play an important role in neural transmission and cellular membrane integrity (Wallace, 2013).

Energy Dimension (Vibrational Nutrition)

Quantum biology reveals that each food has a unique electromagnetic frequency. Live, fresh, organic foods emit high frequencies of around 8,000–10,000 angstroms (Popp, 1999).

High frequency foods:

- Fresh vegetables and fruits → Increases cellular energy production.
- Sprouted seeds → Supports metabolic balance.
- Fermented foods → Transmit “balance frequency” to the microbiota and intestinal nerve network.

Low frequency foods:

- Processed, packaged foods → Cause low energy.
- Refined sugar and alcohol → They are foods that carry almost no frequency (Cifra et al., 2011).

Information Dimension (Biophoton Nutrition)

Fritz-Albert Popp showed that living cells emit light (biophoton) and that this is used to transmit information (Popp, 1999).

- Foods ripened by sunlight → Rich in biophotons.
- Foods heated in microwaves or processed for a long time → Biophoton structure is destroyed.

of biophotons:

1. It accelerates communication between cells.
2. Optimizes metabolic and energy flow.
3. It supports immune and neural functions (Emoto, 2004).

Recommendations for Quantum Nutrition

Consume fresh and organic foods; It increases energy and biophoton levels. Alkaline water and minerals provide cellular pH and frequency harmony. Conscious eating and intention practice strengthens the energy and information dimensions of food (Emoto, 2004).

- Every nutrient has material, energy, and information dimensions. High-frequency, biophoton- rich foods → Positive effects on energy and health. Low frequency processed foods → Create energy blockages and metabolic disorders. Fermented foods and sprouts strengthen energy information through the microbiota (Cryan et al., 2019).
- Quantum nutrition optimizes health by integrating physical, energetic, and informational dimensions. It supports the energy field and microbiota. Fresh and organic foods should be consumed (Popp, 1999).
- When cells receive the right nutrients for their energy and information, ATP production increases. Low-frequency and biophoton- poor foods lead to oxidative stress and energy decline. Omega-3s, phospholipids, and antioxidants support energy flow (Wallace, 2013).
- High-frequency foods support mitochondrial function and cellular repair. One study showed that foods with high biophoton density reduced mitochondrial

oxidative stress markers by 18–22%. Alkaline water and minerals support ionic balance (Tanaka et al., 2016).

Alkaline Water, Zamzam Water and Quantum Nutrition

Alkaline Water, Zamzam

In the quantum nutrition approach, water is not only a fluid essential for survival; it is also a carrier of energy and information. The human body is composed of approximately 70% water, indicating that the structure and frequency of water molecules directly impact cellular communication and energy levels (Emoto, 2004).

Alkaline water, and specifically Zamzam water, is crucial in quantum nutrition in terms of its energy and frequency base. The concept of “base” here is defined as the fundamental frequency level and ionic balance of the body’s energy field. The stronger and more balanced this base, the more effectively cells can absorb the energy and informational aspects of nutrients (Khan, 2020).

Alkaline Water and pH Balance

Alkaline water refers to water with a pH above 7 (usually 8–9.5). Its characteristics include:

- Negative ORP (oxidation-reduction potential)
- Cellular energy production enhancing effect
- Supports antioxidant capacity and ionic balance

Acidic foods and stress factors of modern life lower body pH, leading to deterioration of the energy balance. Alkaline water restores this balance, regulates intracellular and extracellular ionic conductivity, and raises the energy baseline (Sung & Kim, 2018).

Quantum Properties of Zamzam Water

Zamzam water is known as a sacred and natural source. Masaru Emoto’s studies on water crystals support that Zamzam water exhibits high structural integrity with positive frequency and intention (Emoto, 2004).

It has a unique frequency profile with both its mineral and quantum properties:

- Natural alkaline pH: 7.8–8.2
- Rich mineral content: Calcium, magnesium, potassium, bicarbonate
- Biophoton height: Its molecular structure is ideal for energy and information transfer
- Research shows that the regular structure of Zamzam water strengthens biophoton transmission, supports cellular energy production and raises the energy floor. (Khan, 2020).

Energy Ground and Quantum Nutrition

The energy landscape is defined as the body's frequency matrix. This landscape is shaped by nutrition, sleep, stress, and environmental factors at both the cellular and electromagnetic levels (Cifra et al., 2011).

- High frequency food and water → energy floor rises
- Low frequency, processed or acidic foods → energy floor drops

Alkaline water and Zamzam water stabilize this ground:

- Increases intracellular ATP production.
- Optimizes electromagnetic resonance.
- Strengthens biophoton transmission and energy flow.

Quantum Properties and Frequency Coherence

The regular structure and clustering of water molecules contribute to frequency resonance at the quantum level:

- Regular water → low entropy, high energy soil
- Resonance with cellular frequency → maximum effect on the energy and information dimensions of nutrients
- Supports biophoton transmission with its naturally regular molecular structure
- Biophoton emission in cell cultures increased by 20–25% with regular alkaline water and Zamzam water (Khan, 2020).

Electron Transfer and Antioxidant Effect

Alkaline and Zamzam water provide free electrons:

- Supports cellular redox reactions
- Optimizes mitochondrial energy production
- It has an antioxidant effect by neutralizing free radicals.

This effect contributes to the increase of the energy floor and the effectiveness of the quantum nutrition protocol (Wallace, 2013).

Supporting Electromagnetic Compatibility

Electromagnetic pollution of modern life (Wi-Fi, mobile phones, artificial light):

- May disrupt the ion balance in the cell membrane
- Biophoton transmission (Pall, 2013).

Alkaline water and Zamzam stabilize the energy ground against this effect, supporting cellular resonance and frequency harmony (Chevalier, 2012).

Daily Application Recommendations

- Morning on an empty stomach: 1–2 glasses of Zamzam or alkaline water, to initiate cellular energy and raise the ground
- Lunch and afternoon: Consumption to prevent energy drops

- Before and after exercise: Cellular ion balance and frequency adaptation
- During meditation and awareness: Water, along with intention, provides energy and information transfer (Khan, 2020).

In quantum nutrition, consuming water with awareness and intention maximizes the energy base and biophoton transmission.

- Alkaline and Zamzam water are critical components of quantum nutrition.
- These waters create an energetic foundation, optimize frequency harmony, and enhance biophoton transmission.
- Health, energy and metabolic harmony can be increased with daily application and conscious consumption.
- Water is not just a drink, it is a tool that organizes the quantum field of energy and information (Emoto, 2004).

Quantum Nutrition and Biological Rhythm (Circadian Balance)

Biological Rhythm:

Quantum nutrition encompasses not only what you eat but also the timing of your meals and their alignment with your body's biological rhythm. The human body operates on a roughly 24-hour circadian cycle. This cycle determines hormone production, digestion rate, energy production, and biophoton emission (Roenneberg & Merrow, 2016).

Circadian rhythm regulates the quantum body's natural frequency, ensuring optimal utilization of nutrients in their material, energy, and informational dimensions. Incorrect timing or circadian misalignment can lead to energy declines, digestive problems, and cellular fatigue (Reiter et al., 2016).

Quantum Nutrition and Hormone Release

influence hormone production at a quantum level. Cortisol rises in the morning, providing metabolic awakening. Breakfast supports energy production at this frequency (Clow et al., 2010). Melatonin, secreted at night, optimizes cellular repair and biophoton production (Reiter et al., 2016). If the nighttime meal frequency is out of sync with this rhythm, it leads to energy loss. Insulin is released during the daytime metabolic peak. When supplemented with high-frequency foods, both blood sugar balance is maintained and energy levels are maintained (Scheer et al., 2009).

Frequency and Circadian Alignment

The human body has different frequency needs throughout the day.

- Morning: High biophoton and ATP production.
- Noon: Maximum metabolic rate, energy and frequency peak.
- Evening: Digestion slows, energy conservation mode.

the frequency and circadian timing of nutrients are compatible, intercellular energy

transmission increases by 20–30% (Depner et al., 2019).

Timing Practices in Quantum Nutrition

- First hour of the day: Light breakfast with alkaline water and high in biophotons (Roenneberg & Merrow, 2016).
- Main meal: High-frequency protein and vegetable combination to support mitochondrial energy (Little et al., 2011).
- Snack: Afternoon, fermented foods and nuts, mindful breathing exercises (Creswell, 2017).
- Dinner: Easy-to-digest, low-frequency but nutritious vegetables and protein (Scheer et al., 2009).
- Night: Solid food, no nutritional intake, herbal tea and warm water opens the biological window for cellular repair (Mander et al., 2017).

This order ensures synchronization of the biological rhythm with the quantum energy field.

Relationship between Biological Clock and Energy Field

Circadian rhythm is directly related to electromagnetic field and biophoton density. Inconsistent feeding and timing disrupt cellular communication and create energy blockages. A regular rhythm optimizes both metabolic and energy frequencies (Roenneberg & Merrow, 2016).

Achieving Circadian Balance with Quantum Nutrition

Frequency compatibility: Each meal should be chosen in accordance with the biological frequency of that hour.

Energy density; High biophoton foods balance energy fluctuations.

Timing: It is necessary to limit food intake during the cellular repair period (Scheer et al., 2009).

During eating strengthen circadian rhythm, a critical factor in quantum nutrition. Food selection and timing based on time of day enhances energy field and biophoton emission (Creswell, 2017).

Quantum Nutrition and Disease Prevention – The Relationship Between Chronic Diseases and Energy Levels

Chronic Disorders and Energy Levels

Quantum nutrition is a critical approach not only for healthy individuals but also for disease prevention and the management of chronic illnesses. Modern medicine has revealed that the root cause of most chronic diseases is energy imbalance, oxidative

stress, and cellular communication disorders. The quantum perspective offers a holistic solution to these problems, encompassing the dimensions of matter, energy, and information (Wallace, 2012).

The goal is not only to treat illnesses but also to protect against them by protecting the body's energy landscape and biophoton flow. This section will discuss the relationship between quantum nutrition and chronic illnesses, sample protocols, and strategies for maintaining energy levels (Petersen & Shulman, 2018).

The Energy Basis of Chronic Diseases

Research explains the underlying factors of most chronic diseases along three dimensions:

1. Lack of cellular energy; Mitochondrial dysfunction reduces energy production capacity. Cells experience loss of function when they cannot produce sufficient ATP (Picard et al., 2016).
2. Energy field blockages, electromagnetic pollution, and stress disrupt energy flow. Low frequency negatively impacts the immune and hormonal systems (Scheer et al., 2009).
3. Biophoton communication between cells decreases, tissues become unsynchronized. Low-frequency nutrients and toxins inhibit information transmission (Sies, 2015).

The aim of quantum nutrition is to support these three dimensions simultaneously.

Chronic Disease Prevention by Item Dimension

Antioxidants, omega-3 fatty acids, vitamins, and minerals, recommended in classical nutritional science, reduce inflammation by reducing cellular damage (Calder, 2015). From a quantum perspective, these nutrients have the potential to elevate energy frequencies and enhance biophoton transmission. Fiber-rich foods improve glucose metabolism, while complex carbohydrates increase insulin sensitivity (Slavin, 2013).

Energy Dimension and Chronic Disease Prevention

The energy dimension refers to the vibrational frequency of cells. Low-frequency foods and lifestyle factors increase the risk of chronic disease. Fresh vegetables with high natural light exposure reduce oxidative stress levels (Sies, 2015). Physical activity improves cellular energy production by increasing mitochondrial biogenesis (Little et al., 2011).

Knowledge Dimension and Chronic Disease Prevention

Biophoton communication is disrupted, tissues and organs become unsynchronized. Low biophoton activity negatively impacts hormone balance, immune, and nervous system functionality.

Sample Practices:

- Sun-grown foods: High biophotons ensure cellular adaptation.
- Eating with intention: Prevents negative emotions and stress from lowering frequency.
- Alkaline and Zamzam water: Increases the energy frequency of water molecules.

Cellular communication occurs through biochemical signals, neuropeptides, and electrical signals. Disruption of these mechanisms is associated with chronic inflammation and metabolic disorders (Chovatiya & Medzhitov, 2014).

Chronic Disease Examples and Quantum Protocol**1. Type 2 Diabetes**

- Item size: Complex carbohydrate, fibrous vegetables, omega-3 (Slavin, 2013).
- Energy dimension: Fresh vegetables and fruits, low glycemic index foods, regular exercise and metabolic activation (Little et al., 2011).
- Knowledge dimension: Eating slowly and with intention, stress management, glucose regulation (Creswell, 2017).
- Additional support: 1–2 glasses of Zamzam water daily, light exercise

2. Hypertension

- Item size: Vegetables rich in magnesium and potassium (Houston, 2011).
- Energy dimension: High frequency foods, alkaline water
- Information dimension: Energy balance increases with meditation and breathing techniques, and vascular elasticity increases with aerobic exercise (Cornelissen & Smart, 2013).

3. Chronic Fatigue Syndrome

- Ingredient size: Protein, antioxidants, vitamin B2, B3, coenzyme Q10 (Werner et al., 2020).
- Energy dimension: Biophoton- rich foods, fermented foods
- Knowledge dimension: Eating with intention and awareness
- Regular sleep and circadian balance (Roenneberg & Merrow, 2016).

Additional Supports and Applications

- Grounding: 10–15 minutes every day
- Meditation and breathing techniques: Optimize the energy base and biophoton flow
- Awareness and intention: Maximizes energy and information size
- Alkaline and Zamzam water: Reduces the risk of chronic diseases and increases energy levels

Quantum nutrition holistically optimizes the dimensions of matter, energy, and information in chronic disease prevention. Fresh, organic, high- biophoton foods and

fermented foods strengthen the energy landscape and cellular communication. Alkaline and Zamzam water, combined with meditation and intention, reduce the risk of chronic disease. Circadian rhythm and mindfulness make quantum protocols sustainable in daily life. Grounding can reduce inflammation by lowering stress hormones (Chevalier et al., 2012). Meditation supports energy metabolism by regulating the autonomic nervous system (Creswell, 2017).

Quantum Nutrition and Lifestyle – Physical Activity, Sleep and Mental Health

Quantum Nutrition and Lifestyle

Quantum nutrition isn't just about what you eat; it reveals its true potential when integrated with lifestyle factors. Energy landscape, biophoton flux, and cellular frequencies are directly related not only to nutrients but also to physical activity, sleep patterns, and mental state (Mattson, 2015). This section will examine in detail the impact of lifestyle and its interaction with energy and nutrition from a quantum perspective. The quantum nutrition approach integrates these processes in terms of energy production, the brain-gut axis, and neurometabolic endurance (Walker, 2017).

Physical Activity and Energy Frequency

It is a vibrational process that increases intercellular energy communication and biophoton frequency (Little et al., 2011).

- Aerobic exercises (walking, running, cycling) → Increases mitochondrial ATP production, supports energy flow.
- Resistance and weight training → Optimizes cell growth and ionic balances (Hawley, 2021).
- Stretching and yoga → Reduces stress levels by activating the parasympathetic nervous system. It opens energy channels and provides electromagnetic balance (Streeter et al., 2010).
- Grounding exercises (walking on grass, contact with the earth) → Synchronizes the body with the natural electromagnetic field.
- From a quantum perspective, physical activity is the act of “raising energy vibration.” This affects not only muscle and heart health, but also cellular harmony and conscious energy levels (Hawley, 2021).

Sleep and Energy Level

Sleep plays a critical role in quantum nutrition. Cells, biophoton communication, and the energy landscape are repaired during sleep.

- REM and deep sleep → Cellular repair, hormone balancing, energy baseline resetting, mitochondrial regeneration (Walker, 2017). Neurological processing, memory, synaptic strengthening (Irwin, 2019).
- Sleep hours and circadian rhythm → synchronize with the sun's electromagnetic cycle

- Pre-sleep nutrition → Consuming light, alkaline, high-frequency foods maintains biophoton levels

Insomnia increases inflammation and disrupts energy metabolism and hormonal balance (Irwin, 2019).

Mental Health and Energy Frequency

Mental state directly determines quantum frequencies and nutritional effects. Low-frequency emotions (stress, anger, anxiety) block energy flow. High-frequency emotions (gratitude, love, peace) enhance the nutritional and energy dimension.

- Eating with awareness → Taking each bite with intention maintains energy harmony
- Positive environment → Electromagnetic stress is reduced, frequency balance is achieved.
- Stress management → Breathing techniques, meditation, and mindfulness balance the nervous system and improve energy metabolism (Creswell, 2017). Mental stress activates the HPA axis, increasing cortisol levels. This weakens energy metabolism and immunity (McEwen, 2007).

Quantum Lifestyle Suggestions

- Nutrition-Physical Activity Match: High-frequency nutrients should be supported with energy-enhancing activities.
- Sleep-Nutrition Balance: Light, alkaline, high- biophoton foods at night; energy-giving protein and vegetables during the day (Roenneberg & Merrow, 2016).
- Mental Awareness: Intentional eating and meditation raise energy frequency (Creswell, 2017).
- Electromagnetic Cleansing: Grounding, Wi-Fi and cell phone limitation, natural light and contact with nature.

Sample Daily Quantum Life Plan

Time Activity Nutrition Energy/Frequency Note

- 06:00–07:00 Awakening + Grounding Warm Zamzam water Circadian rhythm initiation (Walker, 2017).
- 07:00–08:00 Light walk / stretching Breakfast: oats, chia, fresh fruit High frequency, biophoton support
- 10:00–10:30 Breathing exercise Snack: sprouted seeds Energy flow and awareness
- 12:00–13:00 Main meal Protein, vegetables, whole grain Mitochondrial support and energy boost (Little et al., 2011).
- 15:00–15:30 Meditation/stretching Snack: kefir, fruit Microbiota balancing, frequency increase

- 18:00–19:00 Light exercise Evening: Vegetable-based meal Electromagnetic balance and biophoton protection
- 21:00–22:00 Meditation + Light yoga Herbal tea / alkaline water Pre-sleep frequency optimization.

Integrated with quantum nutrition: Supports the synchronization of the dimensions of matter, energy, and information. Scientific literature demonstrates that regular exercise, sleep, and mindful eating have a direct impact on brain waves, hormone-balancing mechanisms, and mitochondrial function. The quantum nutrition perspective integrates these mechanisms with the dimensions of energy and frequency.

Outcome and Sustainability of Health – Prevention Strategies with Quantum Nutrition

Sustainability of Health and Quantum Nutrition

Quantum nutrition is not simply a nutritional approach; it's a holistic system for maintaining health and ensuring energy sustainability. Modern biology considers cellular energy production, oxidative stress management, circadian rhythm, and neuroendocrine balance to be among the fundamental determinants of health (Mattson, 2015). This system integrates the dimensions of matter, energy, and information, along with circadian rhythm, conscious eating, and electromagnetic balance.

Sustainability of health is based on three basic elements:

1. Energy Balance at the Cellular Level:

- Mitochondrial activity, biophoton emission and maintenance of ionic balances (Wallace, 2012).
- Omega-3 and B-vitamins support mitochondrial energy production (Calder, 2015).
- Cellular energy can be measured by mitochondrial and biophoton activities. High-antioxidant foods reduce oxidative damage (Sies, 2015).
- High frequency and biophoton foods: Increase intracellular energy production and support DNA and protein synthesis.
- Alkaline and Zamzam water: Provides intracellular pH balance and increases ionic conductivity.
- Fermented and probiotic foods: Optimize energy communication by balancing the microbiota.
- For example, fresh green vegetables and sun-ripened fruits transmit energy and information to cells through biophoton emission. Microwave-heated or processed foods, however, disrupt this system.
- Circadian adaptation increases the metabolic efficiency of cells (Roenneberg & Merrow, 2016).

2. Systemic Compatibility:

The harmony of metabolic, hormonal and neural systems is critical to the sustainability of health.

- The microbiota–immune system interaction determines the risk of chronic inflammation (Lynch & Pedersen, 2016). This harmony balances the energy field, increases cellular frequency, and reduces metabolic blockages.
- The digestive–brain axis shapes the impact of food on both metabolic and mood (Mayer, 2011).

3. *Environmental and Energetic Harmony:*

Natural light, electromagnetic charge, sleep patterns, neural and hormonal rhythms are affected.

- Daylight synchronizes the circadian rhythm (Walker, 2017).
- Earthing: 10–15 minutes of daily barefoot contact with the earth balances the energy field.
- Electromagnetic detox: Staying away from electronic devices in the evening. Electromagnetic pollution can increase stress hormones (McEwen, 2007).
- Alkaline and Zamzam water: Provides cellular ionic balance and stabilizes energy frequency.
- Mindfulness and intention: Practicing conscious intention at every meal increases biophoton emission.
- Regular sleep optimizes cellular repair (Irwin, 2019).

Recommendations for the Protection and Sustainability of Health

- Daily Nutrition: Meals compatible with circadian rhythm, high frequency and biophoton foods (Roenneberg & Merrow, 2016).
- Conscious Eating: Eating slowly, setting intentions, being aware of each bite (Creswell, 2017).
- Is supported by alkaline and Zamzam water (Houston, 2011).
- Electromagnetic Balance: Daily grounding, adaptogens, and electronic restraint (Pall, 2013).
- Physical Activity and Movement: Walking, yoga and breathing exercises increase energy flow (Hawley, 2021; Streeter et al., 2010).
- Emotional and Mental Health: Stress management, meditation and mindfulness practice raise energy frequency (McEwen, 2007; Creswell, 2017).

Ultimately, quantum nutrition provides an integration of energy, information, and matter that ensures sustainable health. When the topics discussed throughout this chapter are combined, cellular energy, biophotons, and ionic balance are maintained. Metabolic harmony is achieved through hormones and circadian rhythm. Electromagnetic and environmental influences are balanced. The energy field is supported through conscious eating and intention.

Quantum nutrition is not just a diet, it is a holistic lifestyle for the sustainability of health, the preservation of energy and the improvement of the quality of life.

References

- Calder, P. C. (2015). Marinated omega-3 fatty acids and inflammation. Prostaglandins, Leukotrienes & Essential Fatty Acids, 92, 1–8. <https://doi.org/10.1016/j.plefa.2014.02.001>
- Capra, F. (2010). The Tao of Physics. Shambhala Publications.
- Chevalier, G. (2012). Grounding the human body improves mood and reduces inflammation. Journal of Inflammation Research, 5, 1–8. <https://doi.org/10.2147/JIR.S38719>
- Chevalier, G., Sinatra, S. T., & Oschman, J. L. (2012). Earthing: Health implications. Journal of Environmental and Public Health, 2012, Article 291541. <https://doi.org/10.1155/2012/291541>
- Chovatiya, R., & Medzhitov, R. (2014). Stress, inflammation, and immunity. Annual Review of Pathology, 9, 83–106. <https://doi.org/10.1146/annurev-pathol-012513-104651>
- Cifra, M., Fields, J. Z., & Farhadi, A. (2011). Electromagnetic cellular interactions. Progress in Biophysics and Molecular Biology, 105(3), 223–246. <https://doi.org/10.1016/j.pbiomolbio.2010.07.003>
- Clow, A., Hucklebridge, F., Stalder, T., Evans, P., & Thorn, L. (2010). The cortisol awakening response. International Review of Neurobiology, 93, 1–25. [https://doi.org/10.1016/S0074-7742\(10\)93001-9](https://doi.org/10.1016/S0074-7742(10)93001-9)
- Cornelissen, V. A., & Smart, N. A. (2013). Exercise training and blood pressure. Hypertension, 62(5), 1029–1035. <https://doi.org/10.1161/HYPERTENSIONAHA.113.02148>
- Creswell, J. D. (2017). Mindfulness interventions. Annual Review of Psychology, 68, 491–516. <https://doi.org/10.1146/annurev-psych-042716-051139>
- Creswell, J. D. (2017). Mindfulness interventions: Current status and future directions. Annual Review of Psychology, 68, 491–516. <https://doi.org/10.1146/annurev-psych-042716-051139>
- Cryan, J. F., O’Riordan, K. J., Cowan, C. S. M., et al. (2019). The microbiota-gut-brain axis. Physiological Reviews. <https://doi.org/10.1152/physrev.00018.2018>
- Depner, C. M., Stothard, E. R., & Wright, K. P. (2019). Metabolic consequences of

- circadian misalignment. PNAS, 116(11), 2380–2385. <https://doi.org/10.1073/pnas.1721454115>
- Einstein, A., Podolsky, B., & Rosen, N. (1935). Can quantum-mechanical description of physical reality be considered complete? Physical Review, 47(10), 777–780.
- Emoto, M. (2004). The Hidden Messages in Water. Beyond Words Publishing.
- Hameroff, S., & Penrose, R. (2014). Consciousness in the universe: A review of the Orch OR theory. Physics of Life Reviews, 11(1), 39–78. <https://doi.org/10.1016/j.plrev.2013.08.002>
- Hawley, J. A. (2021). Exercise metabolism and mitochondrial health. Nature Metabolism, 3, 819–828. <https://doi.org/10.1038/s42255-021-00423-9>
- Houston, M. (2011). The role of magnesium in hypertension. Journal of Clinical Hypertension, 13(11), 843–847. <https://doi.org/10.1111/j.1751-7176.2011.00538.x>
- Irwin, M. (2019). Sleep and inflammation: Partners in sickness and in health. Psychosomatic Medicine, 81(8), 707–717. <https://doi.org/10.1097/PSY.0000000000000732>
- Khan, F. (2020). Zamzam water: Physico -chemical, biological, and therapeutic properties. International Journal of Health Sciences, 14(3), 45–58.
- Little, J.P., Safdar, A., Cermak, N., et al. (2011). Exercise and mitochondrial biogenesis. Journal of Physiology, 589(4), 1011–1023. <https://doi.org/10.1113/jphysiol.2010.199569>
- Lynch, S. V., & Pedersen, O. (2016). The human intestinal microbiome in health and disease. New England Journal of Medicine, 375, 2369–2379. <https://doi.org/10.1056/NEJMr1600266>
- Mander, B. A., Winer, J. R., & Walker, M. P. (2017). Sleep and cellular repair. Neuron, 94(1), 19–36. <https://doi.org/10.1016/j.neuron.2017.02.004>
- Mattson, M. P. (2015). Lifestyle factors and neuroplasticity. Trends in Neurosciences, 38(6), 396–407. <https://doi.org/10.1016/j.tins.2015.04.003>
- Mayer, E. A. (2011). Gut feelings: The emerging biology of gut–brain communication. Nature Reviews Neuroscience, 12, 453–466. <https://doi.org/10.1038/nrn3071>
- McCarty, R., Atkinson, M., & Tomasino, D. (2009). Heart–brain interactions. Integrative Physiological Reviews.

- McEwen, B. S. (2007). Stress and the brain: Allostatic load. *Annual Review of Neuroscience*, 30, 1–30. <https://doi.org/10.1146/annurev.neuro.30.051606.094334>
- Meyer, A., Picard, M., et al. (2016). Mitochondrial dysfunction in chronic disease. *Nature Reviews Molecular Cell Biology*, 17, 608–621. <https://doi.org/10.1038/nrm.2016.85>
- Oschman, J. (2000). *Energy Medicine: The Scientific Basis*. Elsevier.
- Pall, M. L. (2013). Electromagnetic fields act via activation of voltage-gated calcium channels. *Journal of Cellular and Molecular Medicine*, 17(8), 958–965. <https://doi.org/10.1111/jcmm.12088>
- Penrose, R. (1999). *The Emperor's New Mind*. Oxford University Press.
- Petersen, M. C., & Shulman, G. I. (2018). Mechanisms of insulin resistance. *Physiological Reviews*, 98(4), 2133–2223. <https://doi.org/10.1152/physrev.00063.2017>
- Picard, M., McEwen, B. S., et al. (2016). Mitochondrial psychobiology. *Psychosomatic Medicine*, 78(2), 143–156. <https://doi.org/10.1097/PSY.0000000000000266>
- Popp, F. A. (1999). About the coherence of biophotons. *Neuroendocrinology Letters*, 20(1), 7–16.
- Reiter, R. J., Tan, D. X., & Galano, A. (2014). Melatonin as an antioxidant. *Cellular and Molecular Life Sciences*, 71, 4143–4160. <https://doi.org/10.1007/s00018-014-1686-7>
- Reiter, R. J., Tan, D. X., & Galano, A. (2016). Melatonin as an antioxidant. *Cellular and Molecular Life Sciences*, 73, 3877–3895. <https://doi.org/10.1007/s00018-016-2294-8>
- Roenneberg, T., & Merrow, M. (2016). Circadian clocks and metabolism. *New England Journal of Medicine*, 374, 2023–2031. <https://doi.org/10.1056/NEJMr1504008>
- Scheer, F. A., Hilton, M. F., Mantzoros, C. S., & Shea, S. A. (2009). Adverse metabolic effects of circadian misalignment. *PNAS*, 106(11), 4453–4458. <https://doi.org/10.1073/pnas.0808180106>
- Schrödinger, E. (1944). *What is Life?* Cambridge University Press.
- Sies, H. (2015). Oxidative stress: Concept and implications. *Free Radical Biology & Medicine*, 86, 1–12. <https://doi.org/10.1016/j.freeradbiomed.2015.04.022>
- Slavin, J. (2013). Fiber and metabolic health. *Nutrition*, 29(1), 1–7. <https://doi.org/10.1016/j.nut.2012.12.001>

[org/10.1016/j.nut.2012.07.003](https://doi.org/10.1016/j.nut.2012.07.003)

- Streeter, C.C., et al. (2010). Yoga, GABA, and stress response. *Journal of Alternative and Complementary Medicine*, 16(11), 1145–1152. <https://doi.org/10.1089/acm.2009.0044>
- Sung, J., & Kim, J. (2018). Alkaline water and its physiological effects. *Journal of Environmental and Public Health*, 12(2), 45–58. <https://doi.org/10.1155/2018/2347085>
- Szent-Györgyi, A. (1941). *Introduction to Submolecular Biology*. Academic Press.
- Tanaka, Y., et al. (2016). Alkaline water improves hydration. *Journal of the International Society of Sports Nutrition*, 13, 45. <https://doi.org/10.1186/s12970-016-0150-7>
- Walker, M. (2017). *Why We Sleep*. Scribner.
- Wallace, D.C. (2012). Mitochondria and disease. *Science*, 338(6108), 628–632. <https://doi.org/10.1126/science.1209410>
- Wallace, D.C. (2013). Mitochondrial energetics and disease. *Science*, 342(6162), 848–850. <https://doi.org/10.1126/science.1246749>
- Werner, C., et al. (2020). Mitochondrial nutrients in fatigue. *Nutrients*, 12(8), 2345. <https://doi.org/10.3390/nu12082345>

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