

Lifton, A New Biomaterial Of Life And Death Systems

S. K. Srivastava*
Yashodhara Verma**
Avinash Varma***

Abstract:

Tissues are biomaterials, which play important role in complex and intricate system of human body. The two ways by which generally death can be confirmed are (i) when cardiac (heart) Beat stops and tissue stops function (cardiac death) and (ii) when brain tissue stops its Function (brain death). Blood pressure and body temperature play vital role to sustain Life and death. The dynamics of living biomaterials is complex in nature. All living beings on Earth possess some physical principles of conservation and transformation of matter and Energy. Life is maintained by transformation of energy from the sun.

The heart beating and vibrations generated in the brain may be expressed through the wave Function of vibrating motion of simple harmonic type. The Order- Disorder Transformations (ODT) of the form $\int \int E_q(T, t) \Delta T \Delta t \approx (1/2\pi)$ occurring in the life and death systems of Human's body is controlled by quantized energy $E_q(T, t)$. The quantized energy particle called Lifton, a bio-catalytic material is responsible for the sustainability of life system and the occurrence of death system, which possess order and disorder characteristics both. There is some natural power energy (time dependent only) that controls all the events and ends in the last after decay of Lifton biomaterial on the basis of Einstein's mass energy equivalence. Time and temperature both plays important roles in the attainment of life (Disordered state) and death (Ordered state). The behavior of time with respect to temperature of quantized particle, Lifton describes an exponential decay, $t = \exp [c / (\pi \lambda k_B T^2)]$. It reveals the fact of decaying process of temperature as life span increases.

Key Words: Biomaterial, Bio-catalyst, Tissues, Lifton, Life and Death Systems, Order and Disorder states, Order- Disorder Transformations, Quantized energy particle

1. Introduction: The human body is an incredibly complex and intricate system. Tissues are biomaterials, which play important roles in human body. There are of four main types of tissues: (i) muscle tissue (ii) skeletal muscle (iii) cardiac and (iv) smooth muscle. All tissues develop from the three primary germ cell layers that are formed in an embryo. Cardiac Tissue is a special tissue of first variety, which is found only in the

walls of the heart and shows the characteristics of smooth muscle and some of skeletal muscle tissue. It plays an important role in the contraction of the atria and ventricles of the heart, which causes the rhythmical beating of the heart, circulating the blood and its contents throughout the body as a consequence. Brain is

another sensitive organ, which controls some of the body's vital functions, like blood pressure, heart rate, coughing, swallowing, control of body temperature and breathing etc. After cardiac tissue, the brain tissue is another important tissue. The brain is made of nerves and ganglion. It is made up of inter connecting neurons, which transmit and store information. An effort has been made to develop the complex human brain tissue in a 3D - culture system as reported recently in Nature publication¹. The effort was to generate neuro-ectoderm, a basic cell layer of nervous system from which mini brains of maximum size were obtained but they could not survive even for a year in the spinning bioreactor. No further growth was observed due to the lack of a circulation system associated to genetic disorder and other neuronal disorders.

The brain tissue can't be donated after the death of a person while heart tissue can be. The heart valve tissue can be stored for up to ten years. Actually tissues don't require a constant blood supply and don't need to be transplanted as quickly as organs. Tissue transplantation may not be life-saving but, it dramatically improves and enhances the quality of lives. The brain death occurs when the brain is unable to receive blood and oxygen because of a severe injury or some developed disorders but the heart is still beating because the person has been medically cared for on mechanical ventilation. The brain continues to function when someone is unconscious or in coma because it can still be supplied with blood and oxygen. The cardiac death occurs when the heart stops beating. When this occurs then there is no longer a pump to circulate blood and oxygen to the brain and other organs of the body hence the person dies. There are two ways by which death can be confirmed (i) when cardiac tissue stops function, there is cardiac death and (ii) when brain tissue stops function, and then there is brain death.

Blood pressure and body temperature play vital role in sustaining life and death. Their irregular functions can cause various diseases. Highest point of expressed blood pressure of a human body is the pressure at the time of the cardiac cycle when the heart contracts, forcing blood out and the lowest point of blood pressure is the pressure in the cardiac cycle when the pressure is at its lowest, while the heart is refilling with blood. Body temperature depends on the heat energy produced minus the heat lost. The survival of living beings greatly depends on their capability to maintain a stable body temperature irrespective of surrounding environment temperature. Human body temperature varies through thermoregulation process. The balance of heat produced and heat lost maintains a constant body temperature. Due to cellular aging the elderly can't maintain body temperature. Ageing is generally characterized

by the declining ability to respond to stress, increasing homeostatic imbalance and increased risk of disease. Because of this, death is the ultimate consequence of Ageing.

The dynamics of living biomaterials is complex in nature. The molecules of protein form the basis building block of life as well as play important role in the evolution of life² as evident on the basis of Order- Disorder Scientific Theory^{3,4}. The laws of nature can't exist without time as observed recently⁵ in the dynamics of life and death systems. During the fertilization of egg, the Lifton, a new quantized bio-catalytic material particle of Order- Disorder Transformation energy $E_q = E_q(T, t)$ [T: temperature, a disordered parameter; t: time, an ordered parameter] function in controlling and generating the activities of heart beating and vibrations in brain.

2. Methodology And Results: All living beings on earth possess some physical principles of conservation and transformation of matter and energy. Energy in each and every entity of our planet earth directly or indirectly is supplied from sun, the main source of energy. All the existing elements on earth and in living beings are in a transformed form from sun radiation. Life is maintained by transformation of energy from the Sun. The creation of life is based on matter- energy equivalence phenomena, which follow random behavior and occur multiple activities in the form of quantum energy packets inside the life system with different wavelength λ , which is in turn related to temperature, T as $T \rightarrow f(E) \rightarrow f(1/\lambda)$. The existence of earth and living things on earth depend on sun as the well known different constituents (soil, water, energy, space and air) of life have been made up largely from elements oxygen, hydrogen, sulphur, phosphorus, calcium, sodium, potassium, and iron. Hydrogen is the basic element by which other elements are believed to be formed. These elements make up molecules of living biomaterials.

The important tissues of heart and brain lose their functions during death. The heart beating and the vibrations generated in the brain may be expressed through the wave function of vibrating motion of simple harmonic type [$\Psi = \sin \{(2\pi/\lambda) vt\}$]. The dominance of Temperature T exists in whole space of human body such that the wave function transforms to

$$\Psi = \sin [(2\pi E_q(T, t)), \quad (1)$$

which, for satisfying the quantum parity condition

$$\int \Psi \Psi^* d\tau = 1, \quad (2)$$

leads to Order-Disorder Transformations (ODT, referred here after) of the form

$$\int \int E_q(T, t) \Delta T \Delta t \approx (1/2\pi) \quad (3)$$

This agrees with the Heisenberg result:

$$\Delta v \Delta t \approx (1/2\pi) \quad (4)$$

where v is the frequency. Here E_q is the quantized energy of the form

$$E_q = E_q(T, t) = (k_B / c) (\lambda T / t) = (k_B / v) (T / t) = (\epsilon_T / t), \quad (5)$$

The quantized particle of ODT energy is pronounced here as Lifton, which possess order and disorder characteristics both. $\epsilon_T' [\epsilon_T = (\lambda / c) (k_B \cdot T)]$ is pronounced as SYA constant and $\epsilon_c' [\epsilon_c = (\lambda / c t) \cdot k_B]$ as equivalent thermal capacity constant. The dimensions of 'h' (Planck's constant) and SYA constant ϵ_T are same. Similarly the dimensions of 'k_B' (Boltzmann constant) and equivalent thermal capacity constant ϵ_c' are same. The physical meaning⁶ of 'h' (6.55×10^{-27} erg.sec) and its dimension is same as that of Energy x Time. It denotes an elementary quantum, a responsible quantity for discrete individuality and dual characteristics.

The validity of eq. (5) establishes when we introduce the concept of a probability distribution function $f(E, t)$ in the Heisenberg

Uncertainty Principle ($\Delta E \Delta t \rightarrow \geq h/2\pi$) of atomic systems. This was in order to bring the integral space for all the existing systems of nature and the universe in line with the Order - Disorder Scientific Philosophy^{3,4} as in:

$$\int \int f(E, t) \Delta E \Delta t \approx (1/2\pi) \approx \int \int f(D, O) \Delta D \Delta O, \quad (6)$$

which agrees with eq. (4). Here 'O' is a symmetrical and periodic quantity (for order of nature) and 'D' is an unsymmetrical quantity (for disorder or randomness or entropy). Both depend on the probability of distribution concept. Here, the distribution function is given by

$$f(E, t) = \exp(E / \epsilon_E) \cdot \exp\{(-\epsilon_T / t) / \epsilon_E\} \quad (7)$$

where ϵ_E is the energy of evolution. We find finally from eq. (6)

$$E = \epsilon_T / t = (k_B / c) (\lambda T / t) \quad (8)$$

which is the form of quantized energy as mentioned in eq. (5).

Finally from eqs. (3) and (5), we obtain

$$(\epsilon_T / t) \log t = [1 / (\pi T t)] \quad (9)$$

$$\text{Or} \quad t = \exp [c / (\pi \lambda k_B T^2)] \quad (10)$$

Time and temperature both play important roles in the attainment of life (disordered state) and death (ordered state). The behavior of time with respect to temperature of quantized particle, Lifton describes an exponential decay. It reveals the fact of decaying process of temperature as life span increases.

3. Conclusions: The displacement of time brings about agitations in atoms and thermal vibration develops. This enhance the temperature, energy and mass in matter and ultimately randomness in behavior of matter and radiation develop., i.e., Order- Disorder Transformations are responsible for producing particle and wave characteristics (dual nature) in matter and radiation both, which is supported by Third Law of Thermodynamics. Disorders

decaying situation develops the failure of life and tendency for the occurrence of death.

The quantized energy $E_q(T, t)$ particle called Lifton, a biocatalyst is responsible for the sustainability of life and the occurrence of death. There is some natural power that controls all the events and ends in the last after decay of Lifton biomaterial of human body system on the basis of Einstein's mass energy equivalence.

Lifton time plays dominant role during decaying process of temperature as life span increases.

REFERENCES:

1. Madeline A. Lancaster, Magdalena renner, Carol-Anne Martin, Daniel Wenzel, Louise S. Bicknel matthew E. hurles, Tessa Homfray, Josef M. Penninger, Andrew p. Jackson, Juergen A. Knoblich,

Cerebral Organoids Model Human Brain Development and Mirocephaly, *Nature*, 2013, Def., 10,1038, *Nature* 12517.

2. S.K.Srivastava, Order Disorder Scientific Philosophy- IV : Evolution of Life, Chiang Mai J. Sci. 2013; 40(2): iv-vii

3. S.K.Srivastava, Order Disorder Scientific Philosophy- I, Chiang Mai J. Sci. 2012;39(3):v-vi

4. S.K.Srivastava, Order Disorder Scientific Philosophy- II, Chiang Mai J. Sci. 2012; 39(4):iv-vi

5. S.K.Srivastava, Yashodhara Verma and Avinash Varma, International Journal Of Scientific And Engineering Research (IJSER), 2014, 5 (1), 1922-1926

* Corresponding Author

* Former Professor of Physics, Devi Ahilya University, Indore, India & Founder and Patron member of International Disordered Systems Associates Society, 113 / 4, Alop Bagh, Allahabad, India <indias_matri@yahoo.co.in>

** Department of Biochemistry and Biochemical Engineering, SHIATS, Deemed to be University, Allahabad, India <yashodhara.verma0@gmail.com>

*** Department of Biochemistry, Faculty of Agriculture, Mahatma Gandhi Chitrakoot Gramoday University, Chitrakoot, India <v_avinash2k@rediffmail.com>