

Part I: Concept of Inheritance: A Comparative Study between Philosophers and Scientists

Part II: Apoptotic Index and Qualitative DNA Damage in the Peripheral Blood Lymphocytes of Advanced Yoga Practitioners, Normal Volunteers and Carcinoma of Breast Patients.

By

Amritanshu Ram

Abstract

Part I: Concept of Inheritance: A Comparative Study between Philosophers and Scientists

The process of life and death as understood by modern science is a raving contrast when seen in view of the Indian scriptures. Since time immemorial biologists have researched deep into various aspects of the human life and each conclusion has lead to the understanding of this phenomenon called life. In the early seventies scientists made a breakthrough in understanding the concept of inheritance. The transfer of information from one generation to its succeeding progeny was soon understood by another brilliant scientist called Johannes Mendel. Another stream of thought called psychology originated that was very important in the complete understanding of the life. Dr.Sigmund Freud was the pioneer in understanding the human psyche to a very significant extent. The understanding of the structure of a simple molecule, the DNA, stood at the gateway of a new field of study called genetics. Further discoveries in the field of psychology, however, has a little more understanding of life. In today's world there is a growing need to expand the understanding of this process of life. The researchers have realized that by localizing, any study of life does not lead to the proper knowledge and thus there is a cross talk between the studies to bring about a comprehensive understanding of life. When all the other civilizations were at war to conquer more land and get better resources to increase their leader's prosperity, Indians trusted the simple sages, who lived in a hermit in some unknown corner, as their leader. It was these sages and who gave the knowledge and know how of these great secrets.

Vedanta and yoga are spiritual in nature. Even secular branches of knowledge such as physics, mathematics, trade and commerce various medical disciplines psychological aspects of life such as human relationship should be spiritually oriented. This study intends to bring about a comprehensive picture of what different literatures opine about the ever intriguing phenomenon called inheritance featuring references from latest science and Indian scriptures and to suggest a model for the phenomenon of inheritance synthesizing both streams of thought.

In the field of inheritance it is seen that there are two basic dogmas or laws laid out. The one of the monohybrid cross and the dihybrid cross. These are methods that an organism adopts for the transfer of its characteristics to its next generation. Heredity and variations are two complementary forces acting on the inheritance to decide the characters of the progeny. There are two more concepts explained in this field namely the genotype and the phenotype. Similarly in the Indian scriptures there are details about the process of how the birth, death and rebirth occur. Due to the inability of either one of these suggested mechanisms to understand and explain many unexplained metaphysical phenomena, these streams of thought have been put together to see that there are the three types of karmas working on any individual that decide at the time of birth, not only to which mother or father the individual is born to but also what events we will be confronting in the entire life like the social order etc.

Summary and conclusion

With the progress of science and the advent of the knowledge of genetic information processing, many of the phenomena which we thought could not be explained are understood. For example, explanation for the differences in the nature of siblings born to the same parents, differences amongst twins, prodigies, etc. Today all these have been explained by genetics. Are there any phenomena that cannot be explained today through our understanding of the DNA and genes? Is there a need to bring in the concepts from the ancient scriptures to complete our understanding of heredity? Yes. such Phenomena do exist.

1. reincarnation or rebirth: Today there are several scientific evidences that are pointing to this phenomenon of rebirth. If we accept this as

scientifically validated fact then the concept of heredity and transmission of coded information through the parents to the offspring becomes inadequate. One has to posit an entity that survives death and carries on the information of memory. Could this entity be more clearly understood and analyzed using the information parted to us by Indian lore? The ideas revolving around the suksma sarira and its functions in karma and the cycle of life and death could possibly substantiate a lot more than just the speculation of reincarnation.

2. Transfer Potential: This provides a more objective evidence of abrainal existence of intelligence, that has interaction between the gross world and its corresponding subtle components and functions.
3. The random event generation studies; Studies conducted at our center have demonstrated that an individual or group of individuals could change the programmed randomized event generation process by concentration or group prayers and after practice of gayatri mantra. This could find insufficient explanation through the piercing the existence of a supramental entity that governs the measurable from the unmanifest.
4. Other paranormal phenomena: Many interesting dimensions of the human mind has come to light like Psychokinesis, psychosynthesis, telepathy, premonition, ESP, that may need additional support for their complete understanding. Science and especially genetics and other heredity associated studies could use the suggestions given by Indian scriptures to more comprehensively project the phenomenon.

Part II: Apoptotic Index and Qualitative DNA Damage in the Peripheral Blood Lymphocytes of Advanced Yoga Practitioners, Normal Volunteers and Carcinoma of Breast Patients.

Each cell has a definite life span and is programmed to die. This process is termed as Apoptosis. Human populations display a large variability in susceptibility to cancer. The processes involved in apoptosis or programmed cell death play a critical role in protecting the tissue against changes that might lead to cancer. There also have been extensive research on the effects of psychological stress on immune functions and has resolved many controversies in the field of psycho-neuro-immunology, but little is known on the effects of such stress on apoptosis and DNA damage and repair kinetics, processes that

are central to maintaining a normal cell population.

Caspase-3 quantification and agarose gel electrophoresis are used for the estimation of apoptosis in cell lysates. Both these assays require a large number of apoptotic cells and thus are fairly insensitive to the low levels of apoptotic events. Whereas TUNEL assay enables us to see the number of cells that have DNA breaks and DNA damage, although these are associated with several artifacts and create noise.

It is mostly impossible for one to undergo treatment of any cancer without being exposed to either chemotherapeutic drugs or radiation which have well established role in the treatment and prognosis of cancer. It not only affects the tumor cells in a helpful way but also creates imbalances in normal cells leading to increased apoptosis.

The percentage apoptosis and percentage comet were evaluated in the peripheral blood lymphocytes using the single cell gel electrophoresis assay (comet assay). All the subjects who consented were selected according to the selection criteria. Three groups of individuals [sadhaka group (SDK) (n=9), Non-sadhaka group (NSD) SDK and the NSD group (CAB) (n=9)] were assessed for their apoptotic index and their comet index. The SDK and the NSD groups were matched for age and gender. The differences between the three groups were evaluated using Mann-Whitney test. It was seen that there was significantly ($p < 0.05$) lower values in the SDK group when compared to the NSD group in both the parameters. Between the SDK and CAB, significant difference was seen with percentage comet, but not on the percentage apoptosis. Between the NSD and CAB groups significance was seen only in the percentage apoptosis but not in percentage comet. Thus the observation was that sadhakas (SDK) had a lower % apoptosis and lower % comet than age and sex matched non-yoga practitioners (NSD).

Summary and conclusion

In the present study, we have made an effort to display the percentage apoptosis and percentage comets in different groups of the population. Two groups of individuals (SDK and NSD) showing significant difference in the value of the end points is a suggestion that yoga as a way of life may be a good option for the present social scenario.

The % apoptosis and % comet being a parameter that is dependent on many other factors like diet pattern, stress level in the bodily function and other physiological imbalances. These parameters may not directly implicate the psychological status or extent of health in the individual.

However these results may only hope to provide food for thought in the field of psychological stress in the role of basic bodily functions like programmed cell death. This study may provide potential applications in explaining the role of yoga and a yogic lifestyle for a better or healthier life. More work has to be done on evaluating yogic methods to bring individuals in ill-health towards normal health and further towards positive health.

Science today believes in expanding and including a network of processes to understand a phenomenon. Keeping with the spirit it is necessary to keep in mind the prospect of moving towards positive health and not mere prevention or elimination of disease and disorder. Molecular tools such as the one used for this study are the most accurate and accepted and could lead to very strong and firm researches.

Keywords: Philosophers, Scientists, Peripheral Blood Lymphocytes, Carcinoma of Breast Patients.