REVIEW OF PART I

From the study of ancient scriptures it is revealed that Prana is an intrinsic part of consciousness like the shadow to a man. When it gets involved in the creation, it becomes individualised Prana for the created. As long as it is there, the matter exists and the life exists. Prana is responsible for creation and sustenance and that is why it is called life force. Once it retracts , that is the disolution. In the humans as in other matter and life, the prana nourishes it and enjoys its being and movement in different forms viz., prana, apana, samana, udana and vyana. As long as there is perfect freedom for its movement, there is good health. That means the bioenergy of body is in perfect harmony. Every matter has to disolve and the the begining of this process is called aging process. In energy terms it results in changes in bio energy, the other reasons for the same could be disease and infection. Prana does not have an absolute hold over matter and life. It is there as a life force to permit the body to grow and function in the desired manner. But sometimes the body creates conditions that Prana feels obstructions to its movement. If the constriction is severe, Prana has no option but to leave and that is the death. So bioenergy is directly related to prana and the state of health. Any changes in it can be a cause of altered state of health. This bioenergy can be captured through Electrophotonic imaging and with the help of software; state of different organs / systems can be known. In the Part II we shall see how this can be correlated with known bio chemical markers to integrate it in the modern medicine.

PART II

3.0 REVIEW OF THE SCIENTIFIC LITERATURE

3.1 A BRIEF HISTORY OF BIO-ELECTROGRAPHY

In the year 1977, Professor Lichtenberg observed a glow or fluorescence during investigation of electrical charges on an insulator surface that was covered with powder. A century later, Nicola Tesla in (1880), demonstrated the same phenomenon from a human body. This florescence effect became known as 'Lichtenburg figures'. In the year 1892 Nardkevitch-Yodko of Russia developed a method to study human energy state. A Catholic Priest, Father Landel de Morua of Brazil, developed an electrography camera. However, this method was restricted in its uses as it had some complexities and danger in using (Korotkov, 2002c).

3.2 KIRLIAN EFFECT

The discovery of electrography became known to the world by 1939, when Russian investigators Semyon and Valentina Kirlian discovered the same phenomenon. This method of high frequency photography came to be known as Kirlian Effect. Then onwards, this method drew attention of many scientist and researchers worldwide. The Kirlian Effect is known as the resultant of an image of a gas discharge from an object when placed in high intensity electrical field and this outcome as an image is registered on some photo materials. When this technique is used to study biological subjects then it is referred as 'bio-electrography' and Kirlianography. There onwards, the Kirlianography has been explored worldwide to conduct several experiments and investigations of various cases in the field of medicine. There are many references and

published work using Kirlianography on biological subject's mainly human energy field (Korotkov, 2002b).

3.3 ELECTRO PHOTONIC IMAGING TECHNIQUE (EPI)

About two decades ago in 1995, a Russian Scientist, Professor Konstantin Korotkov designed an instrument based on electro photonic imaging (EPI) technique. This was the time when analysis of electrophotonic imaging gained scientific status worldwide. As a typical biometric system, the EPI biometric device is comprised of five components: a sensor, signal processing unit, data storage, a matching algorithm, and a decision process (Kostyuk, et al., 2011).The present equipment based on EPI technique incorporates digital video methods, modern electronics and computer system to process the data for analysis (Korotkov, 2002b, 2011b). Using EPI technique, when any object (animate or inanimate), is exposed to a high electric field (frequency of 1024Hz and voltage of 10 kV for less than a millisecond), there is excitation of electrons at the surface of the object. These excited electrons get converted to photons in the high electrical field and hence results a glow. This phenomenon is known as electro photonic emission, which is captured by Charged Coupled Device (CCD) camera (Hacker et al., 2005; Korotkov et al., 2004). In humans, this measurement is performed from all 10 finger tips. The amount of electron emission from the body fluctuates from homeostatic level under different psychophysiological conditions, (Korotkov et al., 2004).

3.4 ENERGY POINTS IN THE HUMAN BODY

The lead for using electro photonic imaging for human energy measurements comes from the ancient Chinese system of acupressure and acupuncture. More than 5,000 years ago they observed that by pressing certain points on the body, pain was relieved and also benefited other parts of the body remote from the pain and the pressure point. Gradually,

they found more locations that not only alleviated pain but also influenced the functioning of certain internal organs. The art and science of acupressure and acupuncture developed to an extent that experienced practitioners could feel where the bodies of people in pain were constricted and sense which trigger points would alleviate the problem. Of all the parts of the human organism it is the hands and feet that resembles the most structure and shape of the body. Stimulation of the points on hands and feet that correspond to disease areas leads to the recovery. This fact awakens our realization and makes us deeply understand the basis of the curative effect that spring up when the correspondence points are stimulated.

Prof. Park Jae Woo an eminent Korean philosopher and scientist invented Su Jok Therapy. This is a system of treatment comprising of a variety of techniques to prevent and cure illness and restore health without any drugs. The theoretical basis of this system of Healing is the discovery of self regulation Energy System of Human Body. In Korean language **SU** means hand, and **JOK** means foot. The theoretical basis of this system of healing is the discovery in each hand and foot, shape and points corresponding to each part (organ) of human body. These corresponding micro points (systems) in hands and feet can therefore be used conveniently and effectively as remote controls to treat any diseased organ/part in human body. SU JOK Acupuncture is a multi-dimensional healing system. The first dimension is a physical healing system, whereby giving simple stimulation to the specific corresponding points in hands and feet, cure is achieved. It is possible as hand as a miniature correspondence treatment system is the most symmetric part of the human body in structural shapes among entire corresponding systems. The second dimension treatment is adapted from classical acupuncture. The classical 12 main meridians, the 8 extra meridians, and their attendant points are represented on the hands and feet.

The principle behind Su Jok is that there is a continuous flow of energy in all of us. This energy flows in a very systematic and uniformed manner. “Su Jok’s aim is to balance the imbalanced energy in the body—the tissues, the cells and the organs”. Advanced Su Jok uses needles to balance the energy and it is called Six Ki treatment which harmonise energy on the physical, emotional and even the Chakra plane.

Modern scientists wanted to measure this human energy. All living organisms have a cellular, and therefore, a molecular organized structure. The living processes inside them run on a cellular and a molecular level. Bioelectrical activity is one of the very important physical parameters of living organisms (Ignatov et al., 1998). Bioelectric potentials generated by various cells are widely used in medical diagnostics and are recorded as electrocardiogram, electromyogram, electroencephalogram, etc. Between the outer surface of the cell membrane and the inner contents of the cell there is always the electric potential difference, which is created because of different concentrations of K+ , Na+ and Cl inside and outside of the cell and their different permeability through the cell membrane (Kiang et al., 2005).

Taking the lead from system of acupressure and acupunctre (or SU Jok Therapy) and the scientific explanation of working of human body, electro photonic imaging was developed for the measurement of energy levels through the finger points.

Figure 2: Demonstration of the Electro Photonic Imaging Process

Figure 3: Demonstration of excitation of electrons and photonic emission using EPI technique

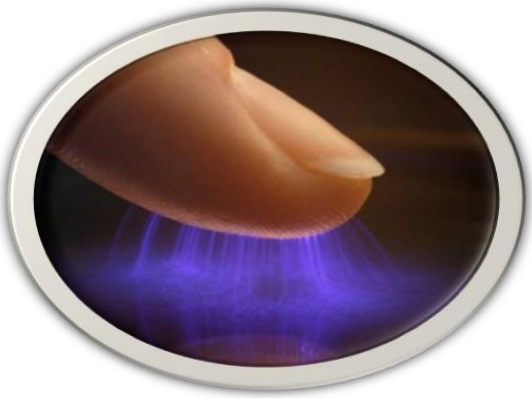
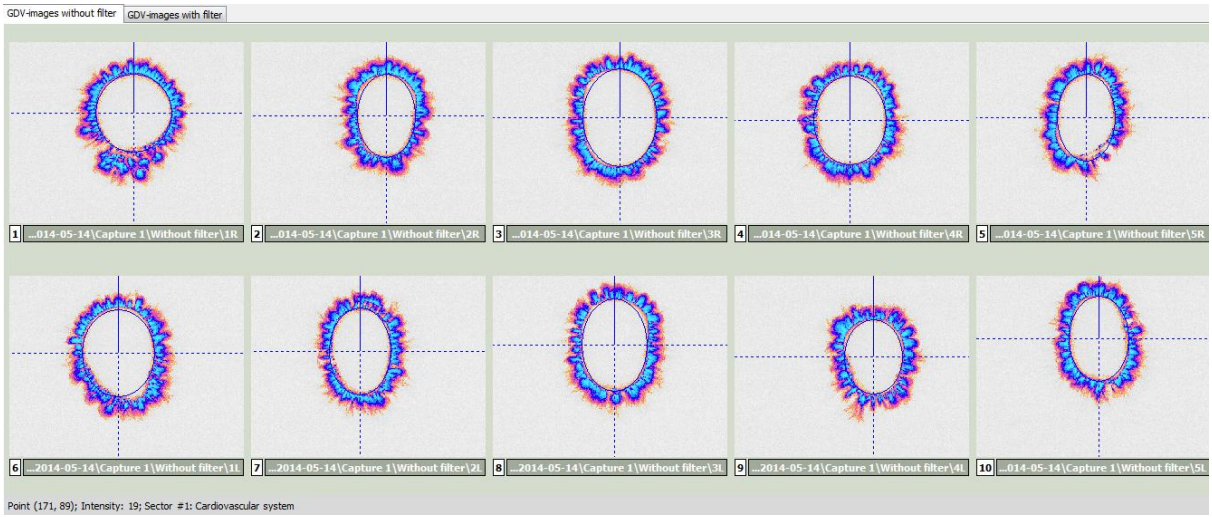


Figure 4: Demonstration of obtained electron photonic images from all 10 fingers using EPI technique



3.5 RECOMMENDED EPI MEASUREMENT PROCEDURE

To obtain reliable and reproducible data, it is necessary to follow the recommended guidelines (Yakovleva & Korotkov, 2015a).

I. Collect data after 3 hours of food intake, without alcohol (approximately 24 hours post alcohol consumption) or strong medicines. Specific medicines like hormones or anti-depressants will have an effect on the energy levels. Subjects should be advised to empty the bladder and bowels before starting EPI readings.

II. Subjects must not wash or wipe their fingers using alcohol before measurements. If hands are dirty then wash but wait for another 15 minutes and then take measurements.

III. If hands are too sweaty, wipe each finger individually and then take the measurements.

IV. Before taking measurements ensure subjects are in a comfortable and pleasant surroundings for about 15 minutes.

V. No other diagnostic procedure should be held at the same time.

VI. In case of periodical measurement of subjects, it is necessary EPI readings be taken by the same expert, at the same place in a constant optimum temperature.

VII. Calibration of EPI device should be performed routinely at least four times a year, or if conditions change, e.g. moving the camera to other site, change of computer, severe changes in atmospheric conditions. The calibration should also be done if results obtained are unusual.

VIII.Subjects should place finger pads, one at a time, on the glass at 45° angles with a gentle but firm touch.

IX. All metallic ornaments that the subjects do not wear for the entire 24 hours must be removed.

X. Subjects must stand on electrically insulated surface during measurements.

XI. Before each measurement the optic lens of the EPI device must be wiped clean.

XII. If EPI grams are unusual, recapture the respective fingers for precise results.

XIII. There should be ideal distance of three feet between EPI device and a dedicated laptop computer while collecting data.

XVI. Women menstruating will affect the EPI results, therefore this factor should be kept in mind during assessments of females.

3.6 RELIABILITY AND VALIDITY OF EPI

Russo et al in (2001) worked on reproducibility of EPI data. They could demonstrate that most people who were assessed showed repeatability of more than 90%. To broaden the study it was necessary to consider physiological factors, influence of emotions, alcohol, medications, and quality of sleep (Yakovleva & Korotkov, 2015a). The reproducibility of EPI parameters was investigated for healthy people and bronchial asthma (BA) patients. This study demonstrated that EPI parameters in healthy individuals have an average variation of 4.1% when measured in a single day and 6.6% when measured within 10 min interval. This variability in BA patients was respectively – 8.6% and 7.7%. This shows the high level of reliability of this technique (Korotkov, 2011c).

3.7 ADVANTAGES OF EPI

I. EPI system is easy to use and all the analysis is computer based.

II. EPI is non-invasive and safe to use .

III. Quick evaluation of health abnormalities from the human energy system,

IV. Simplicity and convenience of the method as measurement is performed from fingers only,

V. It provides quantitative information on the energy homeostasis level both for the organism as a whole and for individual functional systems,

VI. EPI system is relatively economic and the procedure itself does not involves any extra costs.

3.8 EPI ANALYSIS IN THE INTEGRATIVE MEDICINE

A. EPI in clinical areas

Medical biometrics based on the EPI technique has been used in medicine (Olalde Rangel & del Castillo, 2005) to monitor patients and compare their natural electro-photonic emission before and after surgeries (Korotkov, et al.,2011). EPI technique has been utilized to screen and study various population worldwide for medical conditions such as bronchial asthma, hypertension, CVDs, cancer, pregnancy, autism and diabetes etc. Comparisons of three different populations; 1. healthy; 2. patients with stomach and duodenum ulcer; and 3.bronchial asthma patients showed that Area parameter of EPI for unhealthy people are always greater, as compared to that of healthy people.

1. Bronchial Asthma (BA)

EPI area is in proportion to severity. Higher degrees of pulmonary obstruction and more pronounced dysfunctions of the microcirculation in the lungs indicate higher area. Form coefficients (FC) and Fractality demonstrate less significant difference. On the other

hand, Entropy parameter showed statistically significant difference between the groups. The EPI-gram area in BA patients in the restorative phase after acute exacerbation is characterized by lower values of area indices and the integral area (IA) coefficient as compared to practically healthy people. IA values for healthy people were 0.56□ 0.35 on the left and 0.54□ 0.33 on the right side, whereas for BA patients 0.42□ 0.64 on the left and 0.51□ 069 on the right side (P=0.01) (Alexandrova et al., 2002).

2. Hypertension

Another study, investigating patients with arterial hypertension (AH) of different degree of severity, in the course of population screening, found reliable differences between healthy patients and groups with various degrees and stages of AH. This was calculated with sufficiently high accuracy and showed that Electrophotonic technique could be included in population screening (Aleksandrova, Zarubina, Kovelkova, Strychkov, & Yakovleva, 2011).

3. Cardiovascular Diseases (CVDs)

The study was designed to assess changes in images of corona discharges (ICD) in patients with cardiovascular diseases (n=96) comparing with healthy people group (n=30). It showed that age, gender, temperature in examination rooms as well as frame of mind of the study population exerted a similar effect on ICD in both groups. Heart rate, blood pressure and the pattern of coronary heart disease exerted varied effects on the ICD parameters of patients in the study group. It was concluded that the analysis of changes in ICD may be a source of information about the effect of physiological and pathophysiological changes in the human health state, both physical and mental (Ciesielska et al., 2010).

4. Cancer

Looking at the EPI patterns between cancer patients (both breast and lung cancers) and healthy people had demonstrated significant statistical differences.The study also showed that after treatment, EPI parameters shifted toward the “healthy” range of EPI. (Yakovleva & Korotkov, 2015b).

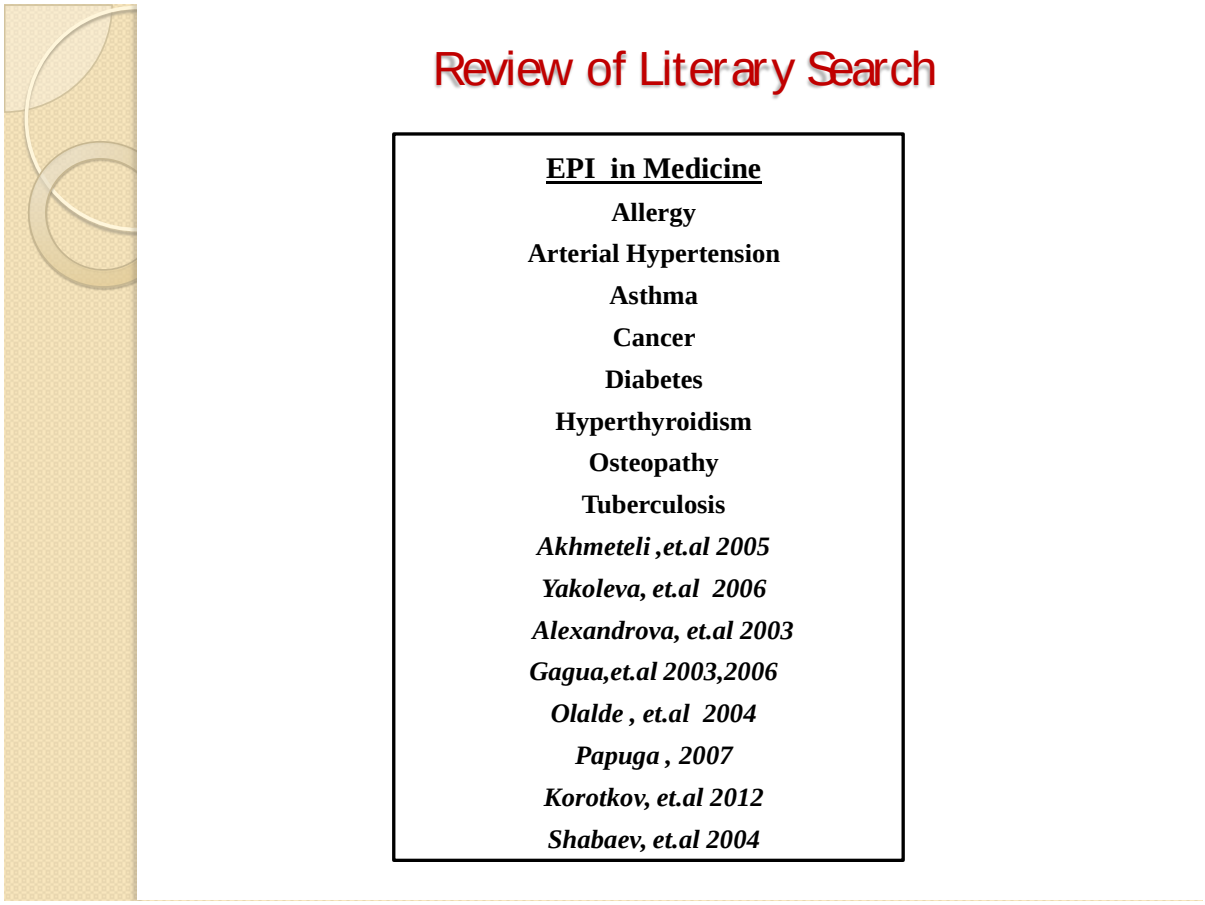
5. Autism

A pilot study was conducted to assess the psycho-emotional and physiological functional state based on the activity of the autonomic nervous system in autistic children, siblings and their parents through a biometric device based on EPI technique. The results showed statistically significant differences on psycho emotional and physiological levels between all compared groups. These differences between autistic children and controls on psycho-emotional level were found the most significant as compared to other groups. Therefore, it was interpreted that the activity of the sympathetic nervous system could have been significantly altered in children with autism (Kostyuk et al., 2010).

6. Diabetes

The recent study in India conducted by Sharma et al. in 2014 demonstrated that the two groups, namely T2DM (Type 2 Diabetes Mellitus) and healthy subjects, have significantly different EPI pattern for cardiovascular, endocrine, immune and urogenital systems. Differences between diabetic and healthy groups showed increasing trend of EPI pattern with increase in duration of the disease. When dividing the diabetes group according to their pathological duration revealed systematic increases in values in all organs and organ systems. However, the study indicated that the existing EPI norms

might be different for the Bangalore based population norms, and, hence, suggested that EPI norms for Indian population should be developed (Sharma, Hankey, & Nagendra, 2014 and was subsequently done (Kushwaha, Srinivasan & Nagendra 2015).



3.9 INTERVENTIONAL STUDIES USING EPI

1. Stress reduction through osteopathy

EPI technique has been explored in various interventional studies, specifically looking at stress reduction and general health index. Such a study to explore how osteopathy treatments influence certain measurable aspects of the human biofield (various calculated parameters of finger corona discharge patterns) in healthy adults was conducted. Results demonstrated that most of the participants of these osteopathic treatments experienced increase in fingertip florescence area and average intensity,

reduction in stress levels, and improved blood pressure measurements (Korotkov et al., 2012).

2. Music and EPI

Influence of Indian devotional music on the human energy in the performers (singers and accompanists) and the audience of a music program was measured by EPI . Parameters area and intensity increased significantly and no significant decrease in the entropy of student audience. Similar trends were observed in the singers and accompanists, though not significant (Rao, Kushwah, & Srinivasan, 2014). Another study, exploring the effect of music and focused meditation on the human energy field using EPI showed that both interventions had a significant palliative effect as thrown through EPI physiological measures. Data indicated a strengthening of the human energy field in area and brightness parameters of EPI (Gibson, 2004). A study investigating the effect of anapanasati meditation on EPI parameters at physiological and psycho-physiological levels found significant changes in integral area with filter (physiological) in both right and left side and similar trends from without filter (psycho-physiological). There was reduction in activation coefficient (stress levels). Integral entropy (disorderliness) found decreased at psycho-physiological level on the left side, but not significant. (Deo, Ravi, Srinivasan, & Kuldeep, 2015).

Review of Literary Search

EPI in Community Set up

Music

Meditation

Profiling

Standardization

Indira „et.al. 2014

Gurudeo, et.al .2016

Sharma ,2013

Kuswaha ,2016