ABSTRACT

The dissipative phase in homeostasis initiates the onset of entropy conservation of the subject in all respect of physiological system.

The thesis is organized in to 10 chapters, the relevance and importance are clearly elaborated for the assessment of the thesis.

The chapter 1 contains the introduction to the physiological dissipative homeostasis whose significance and importance are linked with a control system model. The control system model incorporate negative feedback for dissipative homeostasis, however, it is to be mentioned here that dissipative phase requires the proper coordination’s with the transduction phases linked with the respective homeostasis for initiation of entropy transaction in every living subjects irrespective of its origin.

In chapter 2, literature survey based on the work done linked to dissipative E.coli environment has been done thoroughly and it’s relevance in the context of the thesis is also presented.

In chapter 3, the motivation and object of the present work are explained.

In chapter 4*, the iron homeostasis of E.coli linked with the dissipative stage has been discussed, with the mentioning of appropriate reference. It is to be noted that this dissipative model of iron homeostasis is very important to prevent the cellular damage, which may cause or lead to initiation of serious diseases of which most important is tumor or cancer.

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* A part of this chapter is published in
  • “A topological control system model of dissipative phenomena w.r.t. iron homeostasis linked to E.coli environment”, communicated to international conference on “Biomedical and Pharmaceutical Engineering”, ICBPE-2011 at Singapore.

In chapter 5**, a novel concept of electrostrictive energy linked with capacitance relaxation phenomenon (T.K.Basak, U.S. patent No. 5691178, 1997) has been introduced.
It is to be noted that with the progression of cancer the dielectric property of the membrane with cancer gradually decays with the concomitant decline of electrostrictive energy.

This dissipative phenomenon in respect of the electrostrictive energy can also be analyzed in quantum mechanical algorithm, since this dissipation is not a continuous it varies in steps.

In chapter 6***, the metastasis has been linked with capacitance relaxation phenomenon and its realization has been made with the dissipative phase of the E.coli environment. For this realization a broad based analysis has been made with artificial neural network (ANN). With this analysis it may be possible to explore the apoptosis of cancer cell linked with the metastasis in simulated E.coli environment. In this respect, the application of cancer research in the E.coli environment is to be encouraged.

In chapter 7****, the dissipative model of hydrophobicity with the antiporter linked with the E.coli environment has been discussed. This dissipative model is related to the loss of surface of surface charge in the pH environment of the E.coli. The phenomenon of hydrophobicity is correlated with the coupling of proteins during transcription phase of mRNA in the nucleotide of the cell, which is to be explored effectively in the cancer research.

** A part of this chapter is reviewed and selected for publication in
*** A part of this chapter is reviewed and selected for publication in
  • “ANN analysis of E.coli Environment Related to the Stages of Cancer”, “International Journal of Medicine and Medical-Sciences (JMMS)”.
**** A part of this chapter is reviewed and selected for publication in
  • “A Model of Antiporter Linked to Hydrophobicity of E.coli”, international journal “African Journal of Microbiology”.

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Now, in the chapter 8*****, the dynamic of human body have been discussed with respect to dissipative phase related to the thermal energy. It is to be noted that the correlation of the dynamics of human brain with human body is also of great importance.

It has also been reviewed and discussed about the automated diagnosis method for the tumor. So in chapter 9******, a review on an automated bone marrow diagnosis using advanced image processing application is carried out.

Finally, the conclusion and future possible scope of work are discussed in chapter 10.