

Relative Absorption of Electromagnetic Energy in Adjacent Tissues

Y. V. Narayana¹, G. N. Devi², and G. S. N. Raju³

¹ANITS Engineering College, India

²55-1-26, J.R. Nagar, Venkojipalem, India

³AU College of Engineering, India

The hypothermia is an effective form of therapy over the years. In this technique, the elevated temperatures are used for the treatment. It is possible to make use of the heat generated as a result of raise in temperature for effectively treating the tumors and cancerous tissues. This is possible by allowing electromagnetic energy to incident on the effective tissues for defined intervals.

For effective applications of such methods, the knowledge of the electromagnetic energy absorption in different biological tissues is required. In fact, the absorption depends on frequency and the characteristics of the tissues.

In the present work, some studies are made to evaluate the relative absorption of electromagnetic energy for different pairs of adjacent tissues. It is well known that, the permittivity, conductivity are also functions of frequency and they differ from tissue to tissue.

The different orientations of the electric field of the electromagnetic wave are considered for computing the above mentioned data. From the data obtained in the present work, the relative absorption of electromagnetic energy is found to vary for each pair of tissues. It is also found to be dependent on the polarizations of the electromagnetic wave that is incident on the tissues. The data of the present work is useful for the design of radiation sources.