Micro-particle Electrical Conduction through Human Blood

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Abstract

The electric properties of human blood is vital. This is normal because this viable fluid have huge quantity of unexplored domains about its properties. For example, only few authors have examined the correlation between the electrode polarization and the dielectric alpha dispersion of micro-dipoles present in bio-fluids such as human blood. Even, there is no other authors have reported the presence of alpha dispersion in blood. After the application of ac- field, it is shown that in addition to the presence of electrode polarization; alpha, beta and gamma dispersions are present and can carry out the energy through blood. A model is presented in which different micro-components through blood play an essential role in transferring the energy between the electrodes. The electrode polarization through blood can completely mask the alpha dispersion which may explain why this latter has never been detected through blood. The presented model has successfully fitted to some recent published experimental results that confirm the micro-particle electric conduction and show the presence of alpha dispersion in blood. This will improve diagnostic-medical applications of metallic electrodes as micro biosensors and potential different therapeutic-medical applications.

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