



Time and Spatial Invariance of Impedance Signals in Limbs of Healthy Subjects by Time-Frequency Analysis

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Résumé en anglais	<p>The bioelectric impedance technique is a non-invasive method that provides the analysis of blood volume changes in the arteries. This is made possible by an interpretation of the impedance signal variations. In this paper, time and spatial variations of such impedance signals are studied on recordings made on limbs of 15 healthy subjects at rest. For that purpose, the scalogram of each signal has been computed and quantitative measures based on energies were determined. The results show that the signals are statistically time invariant on three anatomical segments of the limbs: pelvis, thigh and calf. p Value varies between 0.20 and 0.52 for the absolute energies computed on scalograms of signals recorded at 5 min intervals. Moreover, the analysis made on the two legs of each subject shows that the signals are spatial invariant on the three anatomical segments. p Value varies between 0.0785 and 1.000 for the absolute energies computed on the scalograms of signals recorded simultaneously on the two legs. These conclusions will therefore help the clinicians in studying the temporal variations of physiological parameters on limbs with the impedance technique. Moreover, the results on the spatial invariance make possible the comparisons of these parameters with those given by other acquisition techniques.</p>
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