Bioelectrical impedancemetry (BIA) has been used to evaluate hematocrit and red cell aggregability in vitro but whole body impedance measurements are also correlated to some hemorheologic factors, suggesting a relationship between viscosity factors and electric properties of blood. We repeatedly reported correlations with whole body BIA and hematocrit, whole blood viscosity and plasma viscosity, red cell rigidity and RBC aggregation. The SBIA Inbody 770 modelizes body as 5 cylinders and measures impedance at 1, 5, 50, 250, 500, and 1000kHz. With the SBIA we found that hematocrit is best correlated to leg reactance at 50kHz but also to leg impedance at 1 and 5 kHz and trunk reactance. RBC aggregation « M » is best correlated to arm reactance at 5 kHz but also to most measurements of segmental impedance (28 correlations found). RBC aggregation « M1 » is best correlated to arm reactance at 5 kHz and to 19 other impedance measurements. A predictive equation for "M" from the mean between the two arm reactances at 5 kHz (maXc5) is found:

\[ M = 2.1845 \text{ maXc5} - 23.958 \ (r=0.665,p<0.001) \]

that provides a satisfactory Bland-Altman plot (mean difference: 0.000524 range [-1.6;+1.6]. This study suggests that previously reported correlations between BIA and viscosity factors were not spurious, and that in a narrow cylinder such as the arm the structure of circulating blood (hematocrit, red cell aggregation) may influence the passage of an electric current by increasing reactance.