

# Multi-frequency impedance system



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here METHODOLOGY IN DEVELOPING A NEW MULTI-FREQUENCY IMPEDANCE TECHNIQUE TO DETECT BLOOD IN DENGUE PATIENT The development of Multi-frequency Impedance system has continued together with additional hardware as well as extensive software development and below are the detailed procedures in the establishment of the method.

1. The measurable of frequency range may be within the range of 5Hz up to 5MHz. Where needed, impedance values can be translated into SI units, so it would be easier to present both in tabular form and graphical. This will permit easy comparison. Bioimpedance can be measured by loading impedance range in a measure of 100 to 10k.

2. Two leads will be used in order to drive currents into the medium, at the same time acquire potential difference measurements. Note that this procedure will utilize blood. Blood is a living tissue composed of cells and fluid plasma. This plasma consist of the liquid part containing the electrolytes as well as large organic molecules which are electrically polarized.

Molecules. In hemolyzed blood, red blood cells (RBC) are disrupted , so with their intracellular material that being is discharged into the liquid. Thus, the electrical properties of the blood and the haemolyzed blood are basically very different. Whole blood presents , and dispersion, however, almost no dispersion (Schwan, 1983). RBCs are not good conductors of electrical current in a low frequency range as compared with the plasma or extracellular medium which surrounds them.

3. In this method, 0. 01-0. 001% of heparin will be used to avoid coagulation Burger and Van Milaan (1943)

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4. Impedance measurements of a human blood sample at 1kHz and at 37C

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shall be set

using two terminals and also an impedance bridge (Rosenthal and Tobias, 1948)

5. To avoid sedimentation effects, two terminal experiment setup which will included a horizontal cylinder measurement cell design shall be employed.

The cylinder measurement cell design basically will allow laminar blood flow.

Other than the cylinder, sophisticated instrument may also be used;

6. The TAS system will be very significant instruments in the experimental process and shares with the multi-frequency system which is developed by Oh, et al (2006). These instruments include: PC with USB port, TAS software, intra-network controller, main controller with USB interface, multiple ammeters, constant sinusoidal voltage source, hand-held electrode, switches, scan probe of electrodes, and dc power supply. .

7. Resistor phantom will be used to calibrate each ammeter for the various gains and frequencies. The 32 different gains is usually used during the multi-frequency operation.

8. Then, saline phantom will contain the anomaly blood; while disc-shaped reference electrode must be contained at the bottom of the phantom.

9. Frequencies can be set in the range of 10 Hz to 500 kHz.

## REFERENCES

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