P69  New resistivity constants for bioimpedance analysis of body composition  
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**Background** – Bioimpedance spectroscopy (BIS) is recognised as a more accurate method for the assessment of body composition than single frequency bioimpedance analysis (BIA). Nevertheless the method still relies on certain assumptions, most notably the assumed values for the resistivities of intra- and extracellular water (ICW and ECW respectively). Currently used values for adults originate from a study in an Italian population using D\textsubscript{2}O and Br dilution as reference methods for total body water (TBW) and ECW respectively.

**Objective** – To determine resistivity constants for BIS by two methods in an Australian population.

**Design** – ECW was measured in 12 healthy control subjects (9 M, 3F) by Br dilution and TBW by D\textsubscript{2}O dilution or from fat-free mass measurements using DXA (Hologic Discovery) assuming an hydration constant of 0.732. Concurrently, whole body BIS measurements were performed using an SFB7 impedance instrument (Impedimed, Brisbane) and apparent resistivity constants calculated according to the mixture theory model of impedances of body fluid volumes.

**Outcomes** – TBW\textsubscript{DXA} and TBW\textsubscript{D\textsubscript{2}O} were highly and significantly correlated ($r = 0.88$, $P < 0.001$). The resistivity constants for ECW were 201.5 ohm.cm and 183.6 ohm.cm for males and females respectively. ICW resistivity constants differed dependent upon whether D\textsubscript{2}O or DXA was used as the reference method: 735.8 ohm.cm\textsubscript{DXA} and 770.8 ohm.cm\textsubscript{D\textsubscript{2}O} for males and 690.8 ohm.cm\textsubscript{DXA} and 757.2 ohm.cm\textsubscript{D\textsubscript{2}O} for females respectively.

**Conclusions** – Resistivity constants for use in BIS analysis of body composition were derived in an Australian population. The exact values of the constants depend upon the reference method used in their derivation and thus they should not be used interchangeably. It is recommended that the appropriate constants be used where body composition data, derived from BIS, are to be compared with those from either DXA or dilution studies.

P70  Assessment of body fluid volumes by bioimpedance analysis in the obese  
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**Background** – Although obesity is primarily an increase in the fat mass of the body the condition is also associated with changes in body fluid content. In the morbidly obese (BMI > 40 kgm\textsuperscript{-2}) the extracellular water compartment (ECW) is often expanded such that the ECW:ICW (intracellular water) ratio is increased (>0.8) and may remain so even after weight reduction.

**Objective** – To determine the size of body fluid compartments in obese, but not morbidly obese, subjects.

**Design** – Whole body impedance was measured in 92 obese (mean BMI = 34.9 kgm\textsuperscript{-2}) but otherwise healthy females using multiple frequency bioimpedance analysis (Bodystat Quadscan 4000). Total body water (TBW), ECW and ICW volumes were determined according to the mixture theory model of body fluid volumes using different published values for fluid resistivity constants and also using the proprietary Bodystat Quadscan software. Fat and fat-free mass measurements were simultaneously obtained using DXA analysis.

**Outcomes** – Predicted TBW volumes varied slightly depending upon the specific resistivity constants used for calculation but averaged 37.2 L or 40 % of body weight (BW). This compares to a TBW of 50-60 % BW commonly observed in normal weight individuals. Irrespective of the method of calculation, the mean ECW:ICW ratio was 0.62, typical of that found in normal weight subjects.

**Conclusions** – Despite the subjects being obese, with a body fat content approaching half (45.7 %) of body weight, this study showed no evidence of expansion of ECW compared to normal individuals unlike that previously reported for the morbidly obese.