Appendix A

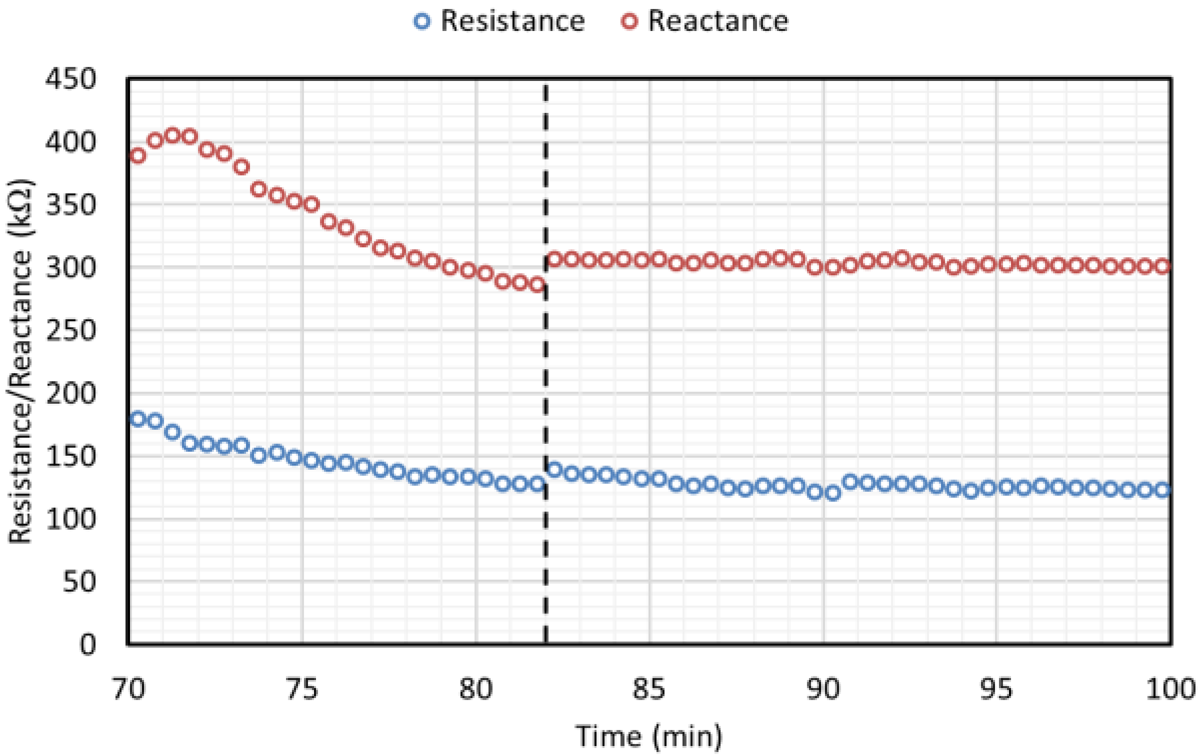

Fig. A.1 Plot of resistance and reactance for Subject C in the final region ('Iontoph. + Pressure'). As shown, both the resistance and reactance steady decrease for roughly 12 minutes after which the slope of each respective plot diminishes.

Shown above is a plot of the resistance and reactance for Subject C during the third portion of the test. Both the resistance and reactance decrease at 4.0 kΩ/min and 11.6 kΩ/min, respectively, during the first 11.75 minutes of measurement (left of the black dotted line). After this period (right of black dotted line), the slope changes to 0.6 kΩ/min and 0.3 kΩ/min for resistance and reactance, respectively. The decrease of the resistance is expected, because as the volume between the sensor(s) as skin begins to fill with sweat the conductance between impedance sensors should increase. Further, as the sensor begins to become fully wetted by sweat the relatively permittivity also increases as air is replaced by water (sweat). Therefore, it is also expected to see a decrease in the capacitive reactance as shown. Similar situations were observed for Subjects A & C. Unfortunately, Subject B's skin impedance data was significantly more noisy making data extraction and interpretation more difficult.

If one assumes that the volume between sensor and skin is saturated when changes in resistance and reactance are minimized, then one can also estimate sweat flow rate per gland. Assuming 11.75 minutes to fill per the previous assumptions, and a volume to fill of 250 ηL then one arrives at an estimated sweat production rate of roughly 5 to 10 ηL/min/gl assuming 2 or 4 glands activated underneath the sensor array described in the main manuscript, respectively. These estimated values correspond well with the expected values for sweat production with carbachol.