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Erratum

A simple and disposable sweat collector

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The following replaces this sub-section given on p 270 of the Methods:

Fractional sampling. When serial samples are collected, one can calculate both the sweat rate and the concentration of any component. For sweat rate, one must first calculate the volume of encapsulated liquid (V_n) just before sampling:

$$V_n = \frac{c_{n-1}(V_{n-1} - S_{n-1})}{c_n}$$

where V_n is the volume in the capsule prior to the nth sample, c_n is the concentration of the marker in the nth sample, and S_{n-1} is the volume of the "$n-1$" sample. Then, the volume of sweat excreted (V_{Sn}) into the capsule between two successive samplings ($n-1, n$) can be calculated:

$$V_{Sn} = V_n - V_{n-1} + S_{n-1}$$

To assess component concentration in sweat volume (c_{Sn}), one must first calculate the amount of component (Q_n) contained in the nth sample:

$$Q_n = c_{An} \cdot V_n$$

where c_{An} is the component concentration in the sweat sample.

Thereafter, the amount of component excreted (Q_{Sn}) in the capsule between two consecutive samples can be calculated:

$$Q_{Sn} = (c_{An} \cdot V_n) - c_{An-1}(V_{n-1} - S_{n-1})$$

Hence, the component concentration in sweat volume excreted (c_{Sn}) is:

$$c_{Sn} = \frac{Q_{Sn}}{V_{Sn}}$$

If the vacutainer aspirating system is used and the sweat volume is very low, the equation given below can be used:

$$c_S = \frac{Q_S}{V_S} = \frac{c_{Se} \cdot V_c}{V_c - V_i}$$

where c_{Se} is the component concentration measured in the sample collected at the end of the observation period; V_c is the volume of sweat measured at the end of the observation period and corrected for aspiration volume losses (approximately 200 µl for a vacutainer aspirating system from a initially dry capsule); and V_i is the volume of deionized water added to the capsule.