# Deacon's Challenge No. 32 Answer

A laboratory performs sweat tests by collecting sweat for 20 min using 5.5 cm filter paper disks. In order to comply with the proposed Sweat Test Guidelines that the sweat secretion rate should exceed 1 g/m$^2$/min what is the minimum weight of sweat that should be collected?

$$\text{Sweat rate (g/m}^2\text{/min)} = \frac{\text{Wt sweat (g) collected in 20 min}}{\text{Area of filter paper (m}^2\text{)} \times 20}$$

Area of filter paper $= \pi r^2$

Diameter = 5.5cm, therefore radius = 5.5/2 = 2.75 cm = 0.0275 m

And area = 3.142 x 0.0275 x 0.0275 m$^2$

Therefore to obtain a sweat rate of 1 g/m$^2$/min using filter paper of 5.5cm diameter:

$$1 = \frac{\text{Wt sweat (g) collected in 20 min}}{3.142 \times 0.0275 \times 0.0275 \times 20}$$

Rearranging:

$$\text{Wt sweat (g) collected in 20 min} = 3.142 \times 0.0275 \times 0.0275 \times 20$$

$$= 0.048 \text{ g}$$

## Question No. 33

An assay mixture for the measurement of lactate dehydrogenase constituted 2.7 mL of buffered NADH and 100 µL of serum. The reaction was started by adding 100 µL of sodium pyruvate. The absorbance change over 5 minutes was 0.150 when measured in a 0.5 cm light path at 340 nm. Assuming the molar absorbtivity of NADH at 340 nm is 6.30 x $10^3$ Lmol$^{-1}$cm$^{-1}$, calculate the enzyme activity.