Deacon's Challenge

No 146 - Answer

An HPLC mobile phase is normally prepared by mixing 27 mL methanol and 20 mL acetonitrile with 153 mL of ammonium acetate buffer. You only have 120 mL of buffer. How much methanol and acetonitrile would you add in order to prepare the maximum amount of mobile phase?

This is a simple exercise in proportionality – as taught in primary school!

153 mL buffer requires 27 mL methanol

therefore 1 mL buffer requires $\frac{27}{153}$ mL methanol

and 120 mL buffer requires $\frac{27 \times 120}{153}$ = **21.2 mL methanol (to 3 sig figs)**

Similarly 153 mL buffer requires 20 mL acetonitrile

therefore 1 mL buffer requires $\frac{20}{153}$ mL acetonitrile

and 120 mL buffer requires $\frac{20 \times 120}{153}$ = **15.7 mL acetonitrile** (to 3 sig figs)

Question 147

It has been suggested that a simple delta-check using serial plasma creatinine measurements be used to detect acute kidney injury (AKI). If the within-subject biological coefficient of variation (CV) for plasma creatinine is 5.0% what minimum analytical CV is required to detect a percentage increase in plasma creatinine of 20% with 95% certainty?

P(%)	10	5	2	1	0.2	0.1
z	1.65	1.96	2.33	2.58	3.09	3.29

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