+ 3/3

Name: Samuel R Turner

In an experiment to determine the amount of vitamin C ($C_6H_8O_6$) in a commercial tablet, 0.08 g of the tablet powder was reacted with I_3^-. The following reaction occurs:

assume excess

$$C_6H_8O_6\,(aq) + I_3^-\,(aq) \rightarrow 3\,I^-\,(aq) + 2\,H^+\,(aq) + C_6H_6O_6\,(aq)$$

If 6.0×10^{-4} mol of I^- was obtained in the product, what is the mass percent of vitamin C in the tablet? You may assume 100% yield for the reaction above.

(The molecular mass of $C_6H_8O_6$ is 176.13 g/mol.)

$$6.0\times10^{-4}\ \text{mol } I^- \left|\frac{1\ \text{mol } C_6H_8O_6}{3\ \text{mol } I^-}\right|\frac{176.13\ \text{g } C_6H_8O_6}{1\ \text{mol } C_6H_8O_6} = 0.035\ \text{g } C_6H_8O_6$$

% of vit C in tablet?

↑ $C_6H_8O_6$

$$\% = \frac{0.035\ \text{g } C_6H_8O_6}{0.08\ \text{g tablet}} \times 100\% = \boxed{40\%\ \text{of vitamin C in the tablet}}$$

↗ measured :: limits sig figs

Great Answer!

Chemistry 161a – Fall 2018 **Chapter 3 Quiz**

+ 3/3

Name: Vanessa Blas
9/20/18

In an experiment to determine the amount of vitamin C ($C_6H_8O_6$) in a commercial tablet, 0.08 g of the tablet powder was reacted with I_3^-. The following reaction occurs:

$$C_6H_8O_6\ (aq) + I_3^-\ (aq) \rightarrow 3\ I^-\ (aq) + 2\ H^+\ (aq) + C_6H_6O_6\ (aq)$$

If 6.0×10^{-4} mol of I^- was obtained in the product, what is the mass percent of vitamin C in the tablet? You may assume 100% yield for the reaction above.

(The molecular mass of $C_6H_8O_6$ is 176.13 g/mol.)

$$.08\ g\ C_6H_8O_6 \times \frac{1\ mol\ C_6H_8O_6}{176.13\ g\ C_6H_8O_6} \times \frac{3\ mol\ I^-}{1\ mol\ C_6H_8O_6} = 1.4 \times 10^{-3}\ mol\ I^-$$

theoretical

actual / theoretical $\frac{6.0 \times 10^{-4}}{1.4 \times 10^{-3}} = 0.43 = 43\%$ but 1 sig fig so 40% of vitamin C in tablet

I didn't think of doing it this way, but it's all correct!

Great Answer!