Laboratory Journal

Paul Mendoza

paul.m.mendoza@gmail.com

Beginning 6 October 2016

Contents

Thursday, 6 October 2016
8:30am - 11:00 am
1:30pm - 5:30pm

1 Experiment Notes

- Project Number: 504370-0001

2 Stock creation and count

- Get stock solution from Troy room 18A, store near rad waste
- Grab 1000μl pipett from glovebox
- Decontaminate with radic - dump waste into glass aq rad outside glove box
- Practice pipetting 500μl to glass vial - setting 503 μl gives 500 μl
- Class/lunch Break
- Get alpha detector from Dr. Marianno
- Set up laboratory notebook
- Calculation To do calculation to determine the volumes needed for a final concentration of a particular volume, knowing the initial concentrations

$$V_2 = \frac{b_2 - \frac{M_1 b_1}{A}}{M_2 - \frac{M_1}{A}}$$
$$V_1 = \frac{b - BV_2}{A}$$

Where:

$$A = (1 - wt\%_1)\rho_1$$
$$B = (1 - wt\%_2)\rho_2$$
$$b_1 = (1 - wt\%_3)V_3\rho_3$$
$$b_2 = M_3 V_3$$

With known Molarity and volume of a solution how much, and of what concentration do we need to combine with a second solution to get a final solution of known concentration and volume?

$$B = (1 - wt\%_3)V_3\rho_3 - (1 - wt\%_1)V_1\rho_!$$
$$A = M_3V_3 - M_1V_1$$
$$C = \frac{B}{A} = \frac{(1 - wt\%_2)\rho_2}{M_2}$$

Need iterative solution, choose:

$$M_2 = \frac{M_3V_3 - M_1V_1}{V_3 - V_1}$$
$$V_2 = V_3 - V_1$$

Use to determine molality $\rightarrow wt\%_2 \rightarrow \rho_2$. Then compare to C, iterate around the solution to find answer so that $C = \frac{(1-wt\%_2)\rho_2)}{M_2}$.

Friday, 7 October 2016
9:00am - 12:00 am
1:00pm - 5:00pm

1 Stock creation and count

☑ Program calculation for creation of stock

☐ -

$$0.149+/-0.011 \text{ ml of } 15.43+/-0.06 \text{ M } HNO_3 \text{ solution}$$
$$+$$
$$1.91+/-0.08 \text{ ml of } 0.0+/-0 \text{ M solution}$$
$$=$$
$$2.048+/-0.026 \text{ ml of } 1.12+/-0.08 \text{ M } HNO_3 \text{ solution } \boxed{\rightarrow Stock} \text{ (glass container)}$$

☐ -

$$\text{Combine } 0.500+/-0.005 \text{ ml of } 15.43+/-0.06 \text{ M } HNO_3 \text{ solution } \boxed{closet}$$
$$+$$
$$2.048+/-0.026 \text{ ml of } 1.12+/-0.08 \text{ M } HNO_3 \text{ solution } \boxed{Stock}$$
$$=$$
$$2.500+/-0.025 \text{ ml of } 4.00+/-0.05 \text{ M } HNO_3 \text{ solution. } \boxed{\rightarrow Stock}$$

☐ Put Source back in rad closet

☐ Remove 0.3 ml from $\boxed{Stock}$ to $\boxed{1}$ count on HPGe 30 minutes

Example

Examples

Formulae

Formula 1 - Pythagorean theorem

$a^2 + b^2 = c^2$

Citation test [1].

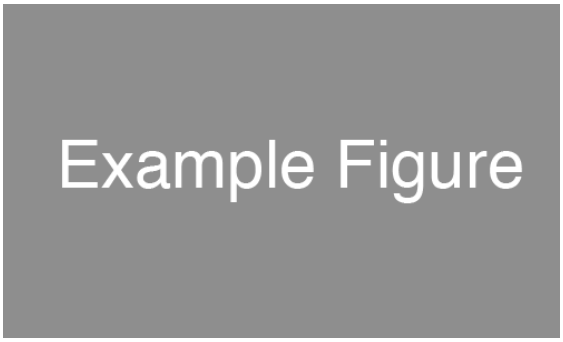

Figure 1: Example figure.

1 This shows a sample table

Groups	Treatment X	Treatment Y
1	0.2	0.8
2	0.17	0.7
3	0.24	0.75
4	0.68	0.3

Table 1: The effects of treatments X and Y on the four groups studied.

Table 1 shows that groups 1-3 reacted similarly to the two treatments but group 4 showed a reversed reaction.

Bibliography

[1] E. T. Tatro, S. Hefler, S. Shumaker-Armstrong, B. Soontornniyomkij, M. Yang, A. Yermanos, N. Wren, D. J. Moore, and C. L. Achim. Modulation of bk channel by microrna-9 in neurons after exposure to hiv and methamphetamine. *J Neuroimmune Pharmacol*, 2013. Tatro, Erick T Hefler, Shannon Shumaker-Armstrong, Stephanie Soontornniyomkij, Benchawanna Yang, Michael Yermanos, Alex Wren, Nina Moore, David J Achim, Cristian L R03 DA031591/DA/NIDA NIH HHS/United States U19 AI096113/AI/NIAID NIH HHS/United States Journal article Journal of neuroimmune pharmacology : the official journal of the Society on NeuroImmune Pharmacology J Neuroimmune Pharmacol. 2013 Mar 19. 4