

Exp. No. 3	Experiment/Subject CHEM 438 (DSP)	Date 9/27/2021
Name Abdul Fayed	Lab Partner Thanh, Nguyen	Locker/Desk No. Course & Section No. 021L

PRE-LAB QUESTIONS

1.
$$\frac{35 \text{ mg Na}}{\text{serum}} \times \frac{1 \text{ serum}}{240 \text{ mL}} \times \frac{1000 \text{ mL}}{1 \text{ L}} \times \frac{1 \text{ g}}{1000 \text{ mg}} \times \frac{1 \text{ mol}}{22.99 \text{ g Na}} = 6.343 \times 10^{-3} \text{ M}$$

2.
$$\text{corrected absorbance} = 0.230 - 0.008 = 0.222$$

$$A = \epsilon b c$$

$$0.222 = \epsilon (10 \text{ cm}) (2.5 \times 10^{-4} \text{ M})$$

$$\epsilon = 88.8 \text{ M}^{-1} \text{ cm}^{-1}$$

$$A = 88.8 \text{ M}^{-1} \text{ cm}^{-1} (10 \text{ cm}) (6.343 \times 10^{-3} \text{ M})$$

$$A = 5.633$$

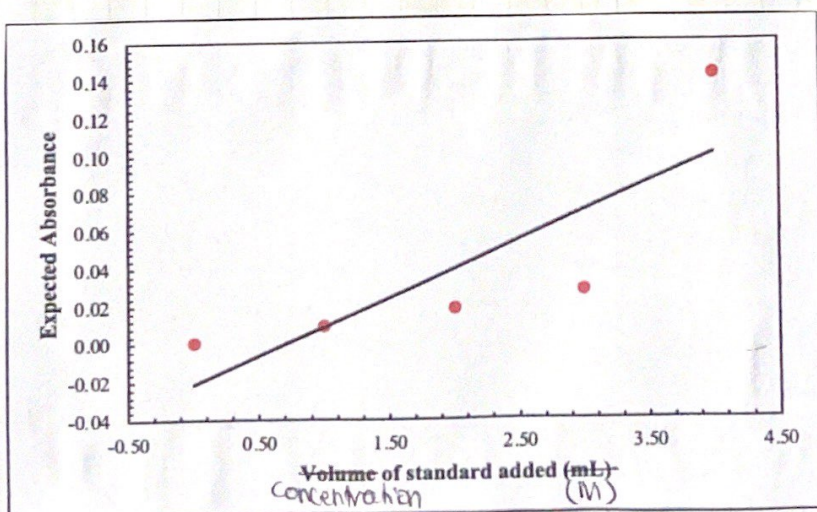
3.

Sample	Conc. Of Standard (M)	V _{total} (mL)	V _{standard} (mL)	Expected Absorbance
1	0.00100	5.00	0.00	0.0000
2	0.00100	5.00	4.00	0.1421
3	0.00025	5.00	1.00	0.0089
4	0.00025	5.00	2.00	0.0178
5	0.00025	5.00	3.00	0.0266

can be wrong, but at least less than 0.5

⇒ Record the instrument's used!

4.



⇒ the x-intercept of the calibration line will indicate the concentration of diluted toxic water solution!

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Objective

The purpose of this lab is to determine the concentration of sodium in tonic water by using the standard addition method.

Introduction

Flame atomic absorbance is one of the instruments that can be used to determine the concentration of sodium in tonic water. Standard addition method is used due to the complicated matrix effect from the sample, which will interfere with the results if normal calibration method is used.

Procedure


1. Prepare 5 sample of varying volume of standard added and a fixed volume of tonic water.
2. Refer to table on page 13 for the specific volume.
3. Dilute the NaCl stock solution given by 100 and 400-fold.
4. Record the instrument used to measure the volume.
5. Read the manual on the software on how to use it correctly.
6. Regularly zero the instrument prior to absorbance measurement.
7. Repeat at least 3 times ~~to~~ when obtaining the absorbance data.
8. Dispose of the chemicals ^{appropriately} and clean the glassware.

Sample	V _{tonic} (mL)	V _{standard} (mL)
1		
2		
3		
4		
5		

Sample	Abs 1	Abs 2	Abs 3
1			
2			
3			
4			
5			

Conclusions

Flame atomic absorbance can be used to determine the sodium concentration in tonic water. Standard addition method is used due to the matrix effect of the sample solutions.

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