WELCOME

TO

This is an Education Platform

We provide Free PDF Notes and Videos Classes for Pharmacy Students

Web Site http://www.fdspharmacy.in/

You tube https://www.youtube.com/channel/UC77iEsiuZolU4pB8WAJIR5Q

What app https://chat.whatsapp.com/IzSgXtFEvhS4LN5xhUgq5z

Telegram https://t.me/+cvxm17xSloA4MjVl

Face book https://www.facebook.com/Fdspharmacy-105764311994440/

E-mail fdspharmacyinfo@gmail.com

Diploma in Pharmacy 1st Year
Pharmaceutical Chemistry
Experiment

To perform the assay of Ascorbic acid by lodometry.

Aim:

To perform the assay of Ascorbic acid by lodometry.

Reference :

‘ Dr. Gupta G.D. , Dr. Sharma Shailish , Kaur Baljeet ’ “Practical Manual of Pharmaceutical Chemistry” Published by Nirali Prakashan, Page no 45 - 48

Apparatus and Material Required :

Burette and stand, volumetric flask, pipette, measuring cylinders, conical flasks, 1.0 M sulphuric acid, and 0.05M iodine.

Theory:

- A redox titration is one method for determining the amount of vitamin C in food. Because there are additional acids in juice, but few of them interact with the oxidation of ascorbic acid by iodine, the redox reaction is preferable to an acid-base titration.

- The triiodide ion is quickly converted to the iodide ion as long as vitamin C is present in the solution. When all of the vitamin C is oxidised, however, iodine and triiodide are present, and they react with starch to form a blue-black complex. The titration's endpoint is the blue-black colour.

Chemical Equations

lodine is relatively insoluble, but by combining it with iodide to make triiodide. this can be improved:

$$I_2 + I^- \leftrightarrow I_3^-$$

Vitamin C is oxidised by triiodide to form dehydroascorbic acid:

$$C_6H_8O_6 + I_3^-, + H_2O \longrightarrow C_6H_6O_6 + 3I^- + 2H^+$$

Procedure:

1% Starch Indicator Solution

1) 0.05 g soluble starch should be added to 50 near-boiling distilled water.
2) It should be mixed well and allowed to cool before use. (doesn't have to be 1%; 0.5% is fine)

Iodine Solution

1) 5.00 g potassium iodide (KI) and 0.268 g potassium iodate (KIO)) should be dissolved in 200 ml of distilled water.
2) 30 ml of 3 M sulphuric acid should be added.
3) This solution should be poured into 500 ml advanced cylinder and it should be diluted to a final volume of 500 ml with distilled water.
4) The solution should be mixed.
5) The solution should be transferred to 600 ml beaker. The label should be labelled as iodine solution.

Vitamin C Standard Solution

1) 0.250 g vitamin C (ascorbic acid) should be dissolved in 100 ml distilled water.
2) It should be diluted to 250 ml with distilled water in a volumetric flask. The flask should be labelled as vitamin C standard solution.

Titration

1) 20 ml aliquot of the sample solution should be pipette out into 250 ml conical flask and 150 ml of distilled water and 1 ml of starch indicator solution should be added.
2) The sample should be tutrated with 0.005 mol L-1 iodine solution. The finglasting trace of a dark blue-black colour due to the starch-iodine complexdetected as the endpoint of titration.
3) The titration should be repeated with further aliquots of sample solution unthe concordant results are obtained.

Observation Table

S. No.	Volume of Ferrous Ammonium	Burette Reading		Volume of KMnO4 Rundown
		Initial	Final	
1	30ml	0	23	23
2	30ml	23	24.5	24.5
3	30ml	24.5	26	26

Calculation

$$\text{Average} = \frac{23+24.5+263}{3} = 24.5$$

$$M_1 V_1 = M_2 V_2$$

$$M_2 = \frac{M_1 V_1}{V_2} = \frac{0.05 \times 10}{24.5} = 0.0204$$

Where,

$M_1 = 0.05M$

$V_1 = 10ml$

$V_2 = 24.5ml$

$$\text{Purity} = \frac{\text{Titre value x Equivalent weight factor x Molarity of titrant (actual)}}{24\ \text{Weight of sample x Molarity of titrant (expected)}\ 5} \times 100$$

Where,

Titre value = 24.5

Equivalent weight factor = 0.02063

Molarity actual = 0.0204

Molarity (expected) = 0.26

$$\frac{\frac{0.02063 \times 24.5 \times 0.02040}{1.031}}{0.05 \times 0.26} X\ 100$$

$$\text{Purity} = \frac{0.013}{} = 79\%$$

Result: The percentage purity of the ascorbic acid sample was found to be 79 %.

Hello

Friends

If you Get Any Help From This Notes / Videos

Next You Turn To Help Us

Please Contribute Some Amount

To Our

FDSPharmacy Team

Phone pe 6398439940

Paytm 6398439940

Google Pay 6398439940

Amir Khan

Thank You

Keep Supporting