DUDHNOI COLLEGE

PROJECT TITLE

STUDY ON EFFECT OF DRYING ON THE OXALATE CONTENT IN THE STEM OF TYPHONIUM TRILOBATUM

THIS PROJECT IS SUBMITTED TO THE DEPARTMENT OF CHEMISTRY, DUDHNOI COLLEGE. AS A PARTIAL REQUIREMENT OF B.Sc (HONOURS) DEGREE
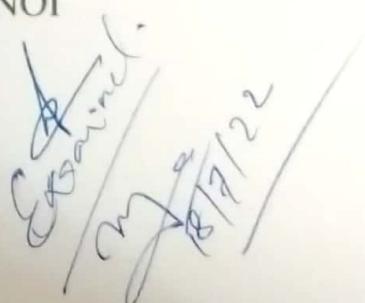
SUBMITTED TO

DEPARTMENT OF CHEMISTRY

DUDHNOI COLLEGE, DUDHNOI

SUBMITTED BY

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ROLL NO- **US-191-097- 0067**

PAPER:- **CHE-HE-6056**

2022

CERTIFICATE

This is to certify that **MISS SHILPA RAY** has completed this project work from May 22 to June 22 in the laboratory of department of Chemistry under my supervision in lieu of DSE-II paper as partial requirement of B.Sc degree (Honours) under Gauhati University.

(DR.Manash Lochan Das)

H.O.D. and Associate professor of

Dudhnoi college

ACKNOWLEDGEMENT

I myself Miss shilpa Ray of 6th semester, chemistry honours of session 2022 have completed my project entitled " study on effect of drying on the oxalate content in the stem of Typhonium trilobatum."

I would like to express my thanks and gratitude to the people who have helped and supported me throughout my project. I am grateful to Sir Dr. Manash Lochan Das for his continuous support for the project, from initial advice and encouragement to this day. I would also like to show my gratitude to all my teachers for the proper guidance and assitance extended by them.

I promise that my project has not been brought from any part of the project done by others.

CONTENT

INTRODUCTION

Arum (Kachu) is consumed all over southeast Asia. It has many health benefits.

Arum has both antioxidant and cholinesterase inhibitory activities. It is an important source of vitamin such as thiamine, niacin, carotene and folic acid. It is used as a medicine in snake bite, dermatities, piles, rheumatoid arthritis, edema, liver disease. Traditionally, some people use this herb as a native medicine for its anti-infla-mmatory, analgesic and antidiarrheal properties.

Although it is used to cure many diseases, however, its over-doses cause many serious health problems. It contains calcium oxalate which excessive intake can tear and harm the soft tissues of the throat. It can also lead to kidney stones, immediate num--bing followed shortly by painful edema, vesicle formation and dysphagia accompanied by painful stinging and burning to the mouth and throat with symptoms occuring for upto two weeks.

Traditionally people collect kachu and cut them into small pieces. Then they dry them under sunlight for several days. After this it is stored either in piece form or crush form. In this way it becomes more edible.

In this project we tried to estimate the effect of drying in oxalate content. We have selected Typhonium trilobatum as our sample.

METHODOLOGY

First I identify the Typhonium trilobatum in our college compound. Then collect some fresh typhonium trilobatum stems and divide them into five parts of about 10 gm each. I weighed each part exactly and labeled them A, B, C, D and E. I took part A, cut them into small pieces and crush to fine pulp by using pestle and mortar. Transfered the crushed pulp to a 250 ml beaker, add 50 ml. dilute H_2SO_4 and heat the contents for 10-15 minutes. After cooling it I filtered the contents in a 250 ml volumetric flask and make the volume upto 250 ml by adding distilled water. 0.1N $KMnO_4$ Solution is prepared by dissolving approximately 1.58 g of $KMnO_4$ in 100 ml of water. This $KMnO_4$ solution is standardized by using 0.1N oxalic acid. Then I pipette out 25 ml of the content extract from the volumetric flask to a conical flask, add 20 ml of dil. H_2SO_4 to it and heat the solution to about 60°C. This solution is titrated against 0.1N $KMnO_4$ solution. The end point is indicated by the appearance of permanent pink colour. This process is repeated for 3 times.

I kept the other parts in hot air oven at about 80°c for one hour and then let it air dry in open. Took part B in second day and estimated its oxalate content. I continued one hour oven drying and air drying for rest of the samples and estimate their oxalate content at one day interval.

RESULT AND DISCUSSION

OBSERVATION

Volume of content extract taken in each titration = 25 ml

Normality of $KMnO_4$ solution = 0.1N

Typhonium trilobatum extract from	weight of Sample (g)	Burette readings		volume of $KMnO_4$ used up (m.l)	oxalate/gm of sample
		Initial	Final		
Fresh Typhonium trilobatum	10.03	0	7.6	7.6	0.78
		7.6	15.4	7.8	
		15.4	23.2	7.8	
One day dry Typhonium trilobatum	10.03	0	6	6	0.6
		6	12.2	6.2	
		12.2	18.2	6	
Two day dry Typhonium trilobatum	10.05	0	5.1	5.1	0.52
		5.1	9.8	4.7	
		9.8	15	5.2	
Three day dry Typhonium trilobatum	10.06	0	4.7	4.7	0.45
		4.7	9.2	4.5	
		9.2	13.7	4.5	
Four day dry Typhonium trilobatum	10.4	0	4	4	0.4
		4	7.5	3.5	
		7.5	11.7	4.2	

CALCULATION

A. For fresh Typhonium trilobatum oxalate content in 25 ml content extract –

According to molarity eqn we have

$$\frac{V_1 M_1}{5} = \frac{V_2 M_2}{2}$$

$$\Rightarrow M_1 = \frac{5 V_2 M_2}{2 V_1}$$

$$= \frac{5 \times 7.8 \times 0.1}{2 \times 25}$$

$$= 0.078$$

B. For one day dry Typhonium trilobatum oxalate content in 25 ml content extract-

According to molarity equation

$$\frac{V_1 M_1}{5} = \frac{V_2 M_2}{2}$$

$$\Rightarrow M_1 = \frac{5 V_2 M_2}{2 V_1}$$

$$= \frac{5 \times 6 \times 0.1}{2 \times 25}$$

$$= 0.06$$

C. For two day dry Typhonium trilobatum oxalate content in 25 ml content extract -

According to molarity equation-

$$\frac{V_1 M_1}{5} = \frac{V_2 M_2}{2}$$

$$\Rightarrow M_1 = \frac{5 V_2 M_2}{2 V_1}$$

$$= \frac{5 \times 5.2 \times 0.1}{2 \times 25}$$

$$= 0.052$$

D. For three day dry Typhonium trilobatum oxalate content in 25 ml content extract -

According to molarity equation

$$\frac{V_1 M_1}{5} = \frac{V_2 M_2}{2}$$

$$\Rightarrow M_1 = \frac{V_2 M_2 \times 5}{2 V_1}$$

$$= \frac{5 \times 4.5 \times 0.1}{25 \times 2}$$

$$= 0.045$$

E. For four day dry Typhonium trilobatum oxalate content in 25 ml. content extract

According to molarity equation-

$$\frac{V_1 M_1}{5} = \frac{V_2 M_2}{2}$$

$$\Rightarrow M_1 = \frac{5 V_2 M_2}{2V_1}$$

$$= \frac{5 \times 4 \times 0.1}{2 \times 25}$$

$$= 0.04$$

CONCLUSION

The amount of oxalate ion in Typhonium trilobatum decreases with drying of the species.

Our traditional method of Arum preservation is found to be scientific in nature and beneficial for health.

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senior secondary practical chemistry II.