

***“The Project Work On To Study The Presence Of  
Pesticides Residues (Nitrogen-Containing) In Fruits And  
Vegetables”***

**A PROJECT WORK SUBMITTED FOR THE PARTIAL  
FULFILMENT OF THE REQUIREMENT FOR THE GRADE-XII  
SCIENCE IN CHEMISTRY**

**By**

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**Grade-XII  
(2078)**



National Academy of Science and Technology **(NAST)**

Dhangadhi, Kailali, Nepal

Date: 2078/09/25

## **ACKNOWLEDGEMENTS**

We would like to express our special thanks of gratitude to our Lecturer of Chemistry *Mr. Krishna Singh Bhandari*, who gave us the golden opportunity to do this wonderful project on the topic “**THE PROJECT WORK ON TO STUDY THE PRESENCE OF PESTICIDES RESIDUES (NITROGEN-CONTAINING) IN FRUITS AND VEGETABLES**”, which also helped us in doing a lot of research in Nitrogen containing fruits and vegetables and we came to know about so Nitrogen containing fruits and vegetables. We are really thankful to them. Secondly, we would also like to thank our friends, who helped us a lot in finalizing this project within the limited time frame.

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## **CERTIFICATE OF APPROVAL**

The project work on “**THE PROJECT WORK ON TO STUDY THE PRESENCE OF PESTICIDES RESIDUES (NITROGEN-CONTAINING) IN FRUITS AND VEGETABLES**” by *Mr. Janak Singh Dhami & Mr. Dipesh Pandit*, under the supervision Lecturer of Chemistry *Mr. Krishna Singh Bhandari*, National Academy of Science and Technology College, Nepal, is hereby submitted for the partial fulfillment of requirement of Chemistry in Grade XII. This project work in our knowledge has not been submitted in any other schools or institutions.

### **Department of Chemistry**

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**Head of the Department**

*Mr. Krishna Singh Bhandari*

.....

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## **RECOMMENDATION**

This is to certify that the project work entitled “**THE PROJECT WORK ON TO STUDY THE PRESENCE OF PESTICIDES RESIDUES (NITROGEN-CONTAINING) IN FRUITS AND VEGETABLES**” has been carried out by *Mr. Janak Singh Dhami & Mr. Dipesh Pandit* as a partial fulfilment of grade XII in Chemistry under my supervision. To the best of knowledge, this work has not been submitted to any other purpose in this institute. I, therefore recommend the project work report for appraisal.

### **Designation of the Supervisor**

*Lecturer of Chemistry: - Mr. Krishna Singh Bhandari*

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## DECLARATION

We hereby declare that the project work entitled “**THE PROJECT WORK ON TO STUDY THE PRESENCE OF PESTICIDES RESIDUES (NITROGEN-CONTAINING) IN FRUITS AND VEGETABLES**” under the supervision Lecturer of Chemistry *Mr. Krishna Singh Bhandari*, National Academy of Science and Technology college, Nepal, presented here as genuine work done originally by *Mr. Janak Singh Dhami & Mr. Dipesh Pandit* and has not been published or submitted elsewhere. Any literature, data or works done by others and cited in this project work has been given due acknowledgement and listed in the reference section.

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## ***“The Project Work On To Study The Presence Of Pesticides Residues (Nitrogen-Containing) In Fruits And Vegetables”***

### **INTRODUCTION**

Pesticide residue refers to the pesticides that may remain on or in food after they are applied to food crops. Persistent chemicals can be magnified through the food chain and have been detected in products ranging from meat, poultry, and fish, to vegetable oils, nuts, and various fruits and vegetables. Pesticides are chemicals used in agriculture to protect crops against insects, fungi, weeds, and other pests. But pesticides are also potentially toxic to humans. They may induce adverse health effects including cancer, effects on reproduction, immune or nervous systems. These are chemicals that are sprayed overcrop to protect it from pests. For example, DDT, BHC, zinc phosphide, mercuric chloride, dinitrophenol, etc. All pesticides are poisonous chemicals and are used in small quantities with care. Pesticides are proven to be effective against a variety of insects, weeds, and fungi and are respectively called insecticides, herbicides, and fungicides. Well known pesticides include insecticides, herbicides, rodenticides, and, fungicides. Pesticides obtained from organic chemicals organochlorides, and pyrethroids. are organophosphates, organocarbamates, most of the pesticides are non-biodegradable and remain penetrated as such into plants, fruits, and vegetables. From plants, they transfer to animals, birds, and human beings who eat these polluted fruits and vegetables. Inside the body, they get accumulated and cause serious health problems. These days preference is given to biodegradable insecticides like Malathion. The presence of Insecticides residues in even raw samples of wheat, fish, meat, butter, etc. has aroused the concern of agricultural administrators, scientists, and health officials all over the world to put a check over the use of insecticides and to search for non-insecticidal means of pest control.

## **MATERIALS**

- Mortar and pestle,
- Beakers,
- Funnel,
- Glass rod,
- Filter paper
- China dish,
- Water bath,
- Tripod stand,
- Fusion tube,
- Knife,
- Test tube,
- Samples of various fruits and vegetables, alcohol, sodium metal, ferric chloride, ferrous sulphate crystals, distilled water, and dil. Sulphuric acid.

## **PROCEDURE**

- ✓ Take different types of fruits and vegetables and cut them into small pieces separately.
- ✓ Transfer the cut pieces of various fruits and vegetables into mortar separately and crush them with a pestle.
- ✓ Take different kinds of fruits and vegetables and place the crushed fruits and vegetables in the beakers and add 100 mL of alcohol to each of these. Stir well and filter.
- ✓ Collect the filtrate in separate China dishes, evaporate the alcohol by heating the China dishes one by one over a water bath and let the residue dry in the oven.
- ✓ Heat a small piece of sodium in a fusion tube, till it melts. Then add one of the above residues from the China dish to this fusion tube and heat it till red hot. Drop the hot fusion tube in a China dish containing about 10 mL of distilled water. Break the tube and boil the contents of the China dish.

## Process For Testing The Presence Of Nitrogen In Fruits & Vegetables (Images)



Fig: Collecting of fruits juices



Fig: Filtering of fruits juice



Fig: Filtering process of fruits juices





Fig: Heating of filtrate juice



Fig: Heating of filtrate juice



Fig: Putting the completely dried ppt. on sodium metal fusion tube



Fig: Putting the completely dried filtrate on sodium metal fusion tube



Fig: adding the  $\text{FeCl}_3$  on dried filtrate





Fig: adding the  $\text{FeCl}_3$  on dried filtrate



Fig: Adding the  $\text{HCl}$  On filtrate

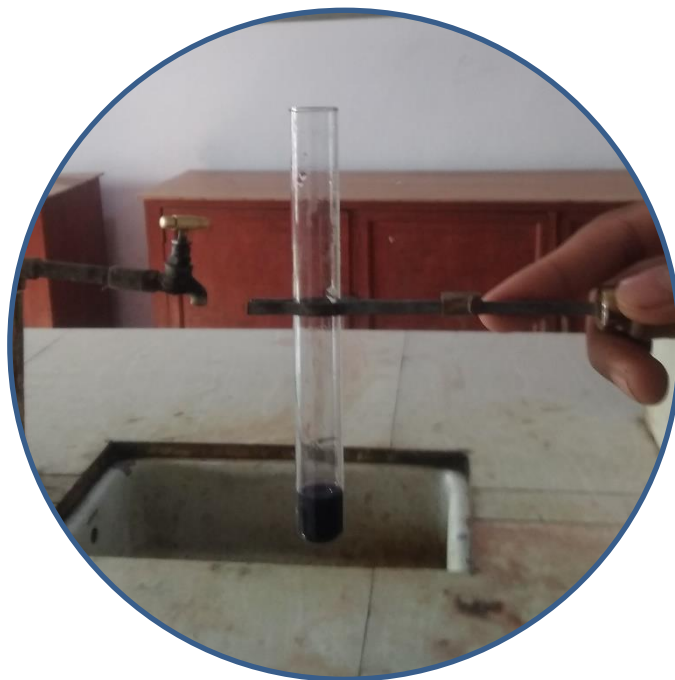


Fig: Presence of Nitrogen (Blue Color)

## OBSERVATION TABLE

S.N.	Name of fruits & Vegetables	Test for the presence of nitrogen	Presence of insecticide
1.	<i>Tomato</i>	<i>Positive</i>	<i>Yes</i>
2.	<i>Apple</i>	<i>Positive</i>	<i>Yes</i>
3.	<i>Lemon</i>	<i>Positive</i>	<i>Yes</i>
4.	<i>Orange</i>	<i>Positive</i>	<i>Yes</i>
5.	<i>Pomegranate</i>	<i>Positive</i>	<i>Yes</i>
6.	<i>Grapes</i>	<i>Positive</i>	<i>Yes</i>

## RESULT & DISCUSSION

Hence, at last of this project work, the blue color is appears. Which shows that the Nitrogen presence (Positive) in given fruits and vegetables & also presence of insecticide in given fruits and vegetables.

## LIMITATION OF STUDY

In this project work, we easily tested the presence of Nitrogen in given fruits and vegetables because we have fresh fruits and vegetables. which is already known, every fresh fruits are Nitrogen containing. But we can't test/find absence of Nitrogen in any fruits and vegetables. We could see same results in every fruits & vegetables.

## CONCLUSION

I have studied different chemical reactions involving in the process of detection of different adulterants in different food items. These experiments were performed to detect various adulterants present in common food. The results obtained during these experiments have been shown in this project. The experiments have been performed by common laboratory methods.

## RECOMAMENDATION FOR FURTHER WORK

This project work could be important insight for the detection of to test the presence of Nitrogen in fruits and vegetables and recommend for detection of other test of fruits.

## REFERENCES

- Guided by Lecturer of Chemistry *Mr. Krishna Singh Bhandari*.
- Mishra. A. D., Bhandari. K. S., **Pioneer Practical Chemistry Part-I for Class-XII**, Dreamland Publication, Anamnagar, Kathmandu.
- Advanced **Chemistry for Class XII**, Surya Publication, Jalandhar, India.
- Bahl & Tuli, **Language of Chemistry**, S. Chand & Company, India.
- Jain. S. K., **Conceptual Chemistry for Class XI & XII**, Chand & Company, India.