

CHEMISTRY PROJECT REPORT

“ANALYSIS OF HONEY”



Submitted by: **Ankit Subedi**

Class: XII 'A'

Rollno: 6 (six)

Submitted to: **Ganesh Parajuli**

Chemistry Teacher

2081/82

Recommendation

It is certified that **Ankit Subedi** has carried out the project work entitled “ **ANALYSIS OF HONEY**” under my supervision. I recommend the project work in the partial fulfillment for the requirement of Grade - XII of science in CHEMISTRY.

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Ganesh parajuli

Amarsingh Secondary School

Pokhara-12-Ramghat

2081-11-28

ACKNOWLEDGEMENTS

First of all, I would like to express my deep gratitude and sincere respect to my supervisor ***Ganesh parajuli*** for his continuous support to my work. His/Her constant guidance helped me to complete my work in proper time. Without his/her scientific vision, understanding of the subject matter and tactfulness to deal with student, the project work would never taken this present form.

I present profound thankfulness to (Sher bahadur Thapa), principal of (Amarsingh secondary school) for his great encouragement and suggestion. I am also thankful to all my teachers of department of chemistry, (amarsingh secondary school). I would like to acknowledge all the staffs of administration and library of our college for their help and cooperation.

I am happy to have a good bunch of friends with whom I enjoyed every academic and non-academic discussion which adds a Morale boost in my work.

Finally, I would like to dedicate this project work to my parents and family members, whose immense support in each and every step of my life help to reinforce my morale.



We certify that we have read this project work and in our opinion it is good in the scope and quality as the project work in the partical fulfillment for the requirement of Grade - XII of science in chemistry.

Evaluation committee

(Name of Supervisor):.....

External examiner.....

(Address) internal examiner.....

Head of Department of chemistry

Date:2081-10-28

Amarsingh Secondary school

INTRODUCTION

Honey is a natural sweet substance produced by bees from flower nectar. It is a complex mixture of sugars, organic acids, enzymes, amino acids, and minerals. The composition varies depending on botanical and geographical sources. Honey has antibacterial properties, making it an important food and medicinal product. Testing the quality of honey involves examining its pH, sugar composition, moisture content, and possible adulteration.

CHEMICAL COMPOSITION OF HONEY

Honey mainly consists of:

- Sugars: Fructose (38%), Glucose (31%), Sucrose (1-5%)
- Water: 17-20%
- Proteins & Enzymes: Invertase, Diastase
- Vitamins & Minerals: Vitamin C, Potassium, Calcium, Iron

MATERIALS REQUIRED

- Honey sample
- Distilled water
- Test tubes
- Benedict's solution
- Fehling's solution A & B
- pH paper
- Refractometer
- Acetic acid
- Iodine solution
- Silver nitrate solution
- Ammonia solution
- Hydrochloric acid
- Test tube stand, Beaker, Glass rod, Dropper

EXPERIMENTAL PROCEDURES

1. pH Test

- Take a small amount of honey and dissolve it in distilled water.
- Dip pH paper into the solution and compare the color change with the standard pH scale.
- Pure honey is mildly acidic, with a pH between 3.2 and 4.5.

2. Sugar Analysis

- **Benedict's Test**: Tests for reducing sugars.
 - Add Benedict's solution to the honey sample and heat it.
 - A red precipitate confirms the presence of reducing sugars.
- **Fehling's Test**: Tests for glucose.
 - Mix Fehling's A & B solutions and heat with honey.
 - A brick-red color indicates glucose presence.

3. Moisture Content Test

- Place a drop of honey on a refractometer and measure the reading.
- Compare with the standard moisture content of honey (17-20%).
- Higher moisture content may indicate adulteration.

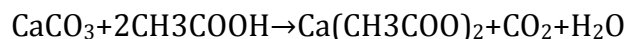
4. Adulteration Tests

- **Iodine Test for Starch**:



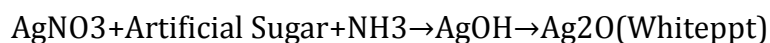
- Add iodine solution to honey.
- A blue-black color indicates starch adulteration.

- **Acetic Acid Test for Chalk Powder**:



- Add acetic acid to honey.
- Effervescence indicates chalk powder adulteration.

- **Silver Nitrate Test for Artificial Glucose**:



- Add silver nitrate solution to the honey sample.
- A white precipitate suggests the presence of artificial glucose.

- **Ammonia Test for Formalin**:



- Add ammonia solution to honey.
- A deep brown color suggests the presence of formalin, an adulterant.

OBSERVATIONS AND RESULTS

Test	Observation	Inference
pH Test	Light acidic color change	Honey is mildly acidic
Benedict's Test	Red precipitate forms	Presence of reducing sugars
Fehling's Test	Brick-red precipitate	Glucose present in honey
Moisture Test	Refractometer shows ~18%	Acceptable moisture content
Iodine Test	No blue-black color	No starch adulteration
Acetic Acid Test	No effervescence	No chalk powder detected
Silver Nitrate Test	White precipitate	Presence of artificial glucose
Ammonia Test	No deep brown color	No formalin detected

CONCLUSION

The analysis confirms that the tested honey sample contains natural sugars, has an acceptable moisture level, and is free from major adulterants such as starch and chalk powder. However, additional advanced tests are required for further authentication.

PRECAUTIONS

- Use clean and dry test tubes for accurate results.
- Handle chemicals with care.
- Ensure proper temperature conditions for reactions.
- Compare results with standard references.

References:

Chemistry book

Chatgpt and google.