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| **CHEMISTRY**  **PROJECT**  **Analysis of honey**  Image result for honey images  **Submitted by:**  **DHWANI GUPTA**  **XII-C** |

***CERTIFICATE***

This is to certify that ***Dhwani Gupta*** of class 12thhas successfully completed the project work of chemistry, titled as “Analysis of Honey” ,for class XII practical examination of the Central Board of Secondary Education (CBSE) in the year 2020-2021.It is further certified that this project is the individual work of the candidate.

Subject teacher:

Mrs Poonam

**ACKNOWLEDGEMENT**

The success and final outcome of this project required a lot of guidance and assistance. I would like to express my special thanks of gratitude to my teacher Mrs Poonam mam as well as our principal Mrs Subha Nair who gave me the golden opportunity to do this wonderful project on the topic “ANALYSIS OF HONEY”, which also helped me in doing a lot of Research and I came to know about so many new things, I am really thankful to them.

Secondly I would also like to thank my parents who helped me a lot in finalizing this project within the limited time frame.

Introduction

Honey has been a staple of the kitchen for centuries. It is a natural substance produced by honeybees, in almost every country in the world.

Honey is laid down by bees as a food source, and humans have exploited this. Apiarists (beekeepers) encourage the overproduction of honey within the hive, so that the excess can be extracted. Beekeeping for the purpose of obtaining honey is an ancient art, practiced in societies.  As an energy source, honey appears to be one of the most effective forms of carbohydrate to ingest after exercise. From a non-nutritional point of view, honey has been used for years to treat a variety of ailments through topical application. It has been used as a remedy for burns, ulcers and wound healing, simply because it has a soothing effect during its application to open wounds. Honey is essentially a concentrated aqueous solution of inverted sugar, namely fructose and glucose, but it also contains a very complex mixture of other saccharides, enzymes, amino and organic acids.

**AIM:**

To analyze the available honey for presence of different minerals and carbohydrates.

**REQUIREMENTS:**

**Apparatus:**  
1. Test tubes,  
2. Test tube stand,  
3. Burner,  
4. Water Bath.

**Chemicals:**  
1. Fehling solution A,  
2. Fehling solution B,  
3. Ammonium chloride solution,  
4. Ammonium oxalate solution,  
5. Ammonium phosphate,  
6. Conc. Nitricacid,  
7. Potassium sulphocyanide solution,

8. Different samples of honey.

THEORY

Honey is a sweet food made by some insects using nectar from flowers. The variety produced by honey bees is the one most commonly referred to and is the type of honey collected by beekeepers and consumed by humans. Honey produced by other bees and insects has distinctly different properties. This wonderfully rich golden liquid is the miraculous product of honey bees and a naturally delicious alternative to white sugar. Although it is available throughout the year, it is an exceptional treat in the summer and fall when it has just been harvested and is at its freshest. Honey bees form nectar into honey by a process of regurgitation and store it as a food source in wax honeycombs inside the beehive. Beekeeping practices encourage overproduction of honey so that the excess can be taken without endangering the bee colony. It has attractive chemical properties for baking, and a distinctive flavor which leads some people to prefer it over sugar and other sweeteners.

**PROCEDURE**

**(1) \*TEST FOR MINERALS\***

**1. Test for Potassium:-**

2ml of honey is taken in a test tube and picric acid solution is added. Yellow precipitate indicates the presence of K+.

**2. Test for Calcium:-**

2ml of honey is taken in a test tube and NH4Cl solution and NH4OH solution are added to it. The solution is filtered and to the filtrate 2ml of ammonium oxalate solution is added. White ppt. or milkiness indicates the presence of Ca2+ ions.

**3. Test for Magnesium:-**

2 ml of honey is taken in a test tube and NH4Cl solution is added to it and then excess of Ammonium phospate solution is added. The side of the testtube is scratched with a glass rod. White precipitate indicates the presence of Mg2+ ions.

**4. Test for Iron:-**

2ml of honey is taken in a test tube and a drop of conc. HNO3 is added and it is heated. It is cooled and 2-3 drops of Potassium sulphocyanide solution is added to it. Blood red colour shows the presence of iron.

**(2) \* TEST FOR**

**CARBOHYDRATES\***

**1. Fehling’s test :-**

2 mL of honey is taken in a test tube and 1mL each of Fehling`s solution A and Fehling’s solution B are  
added to it and boiled. Red precipitate indicates the presence of reducing sugars.

**2. Tollen’s Reagent test :-**

2-3 mL of aqueous solution of honey is taken in a test tube. 2-3mL of Tollen’s reagent is added. The test tube is kept in a boiling water bath for about ten minutes. A shining silver mirror indicates the presence of reducing carbohydrates.

**OBSERVATION TABLE**

**Substance taken: honey**

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| **S NO.**  1} | TEST  **Test for**  Honey + Picric acid solution | OBSERVATION  **Potassium :-**  Yellow ppt. is observed | INFERENCE  Potassium is present. |

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| **S NO.**  2} | TEST  **Test for**  Honey + NH4Cl soln. + NH4OH soln. filtered + (NH4)2C2O4 | OBSERVATION  **Calcium :-**  White ppt. or milkiness isnot observed | INFERENCE  Calcium is absent. |

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| --- | --- | --- | --- |
| **S NO.**  3} | TEST  **Test for**  Honey+ NH4OH (till sol becomes alkaline) + (NH4)3Po4 | OBSERVATION  **Magnesium:-**  White ppt. isnot observed | INFERENCE  Magnesium is absent. |

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| **S NO.**  1} | TEST  **Test for**  Honey + Picric acid solution | OBSERVATION  **Potassium:-**  Yellow ppt.is observed | INFERENCE  Potassium is present. |

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| **S NO.**  4} | TEST  **Test for**  Honey+ conc.HNO3, heated and cooled, + potassium sulphocyanide | OBSERVATION  **Iron :-**  Blood red colour is observed | INFERENCE  Iron is present. |

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| **S NO.**  5} | TEST  **Fehling`s**  Honey + 1mL each of Fehling`s solution A and Fehling`s solution B | OBSERVATION  **test:-**  Red ppt. isobserved | INFERENCE  Reducing sugar is present. |

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| **S NO.**  6} | TEST  **Tollen’s**  Honey + 2-3mL Tollen`s reagent, test tube in water bath for 10 minutes | OBSERVATION  **Reagent Test**  Shining silver mirror is observed | INFERENCE  **:-**  Reducing carbohydrate is present |

**☺ RESULT ☺**

* Potassium is present.
* Iron is present.
* Calcium is absent.
* Magnesium is absent.
* Honey contains reducing sugar.

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**: ) mADE BY**

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**XII – C**

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