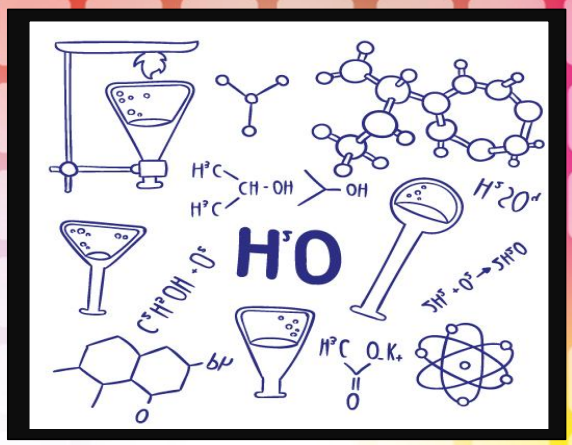
CBSE CLASS 12 CHEMISTRY

PROJECT

2022-2023



Done By:

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Class-12A

Admission Number-A03674

TOPIC
FOOD ADULTERANTS

THE INDIAN COMMUNITY SCHOOL KUWAIT
DEPARTMENT OF CHEMISTRY

BONAFIDE CERTIFICATE

CERTIFIED TO BE THE BONAFIDE RECORD OF WORK DONE BY

Pranav Ajay

*OF CLASS **12** SEC **A***

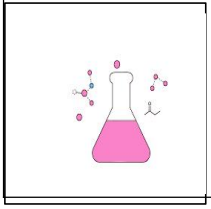
IN THE INDIAN COMMUNITY SCHOOL KUWAIT DURING THE YEAR 2021-22 DATED _____

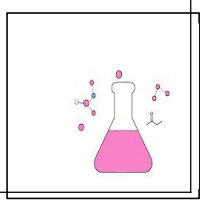
Teacher in charge _____

THE INDIAN COMMUNITY SCHOOL KUWAIT

SUBMITTED FOR ALL INDIA SENIOR SCHOOL CERITIFICATE EXAMINATION IN 2021-22 AT THE INDIAN COMMUNITY SCHOOL KUWAIT

DATE_____ EXAMINER SEAL





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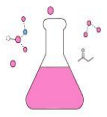
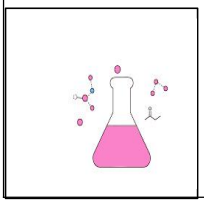
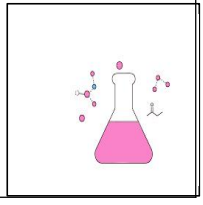


ACKNOWLEDGEMENT

With a joy of accomplishment, having completed this work in, I wish to record my sentiments of gratitude and appreciation to my teacher, Mrs. Jesha Alex, whose guidance and sustained interest has seen the completion of this project. I am also indebted to my parents, Principal Sir, Teachers and friends and well-wishers who have directly and indirectly helped me see this task the light of day. I am grateful to them for their encouragement and constant support.





OBJECTIVE

The Objective of this project is to study some of the common food adulterants present in different food stuffs. Adulteration in food is normally present in its most crude form; prohibited substances are either added or partly or wholly substituted.

INTRODUCTION

Food adulterants are the substance or poor quality products added to food items .Addition of these adulterants reduces the value of nutrients in food and also contaminates the food, which is not fit for consumption.

For instance milk can be diluted by adding water to increase its quantity and starch powder is often added to increase its solid content.

These adulterants can be available in all food products which we consume daily, including dairy products, cereals, pulses, grains, meat, vegetables, fruits, oils, beverages, etc.

Listed below are the main reasons for making use of food adulterants:

- *Practised as a part of the business strategy.*
- *An imitation of some other food substance.*
- *Lack of knowledge of proper food consumption.*
- *To increase the quantity of food production and sales.*
- *Increased food demand for a rapidly growing population.*
- *To make maximum profit from food items by fewer investments.*

MORE ON FOOD ADULTERANTS

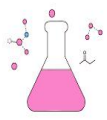
Adulteration in food stuffs

Food Stuffs	Adulturants
Cereal	Soil,pieces of stone ,infested cereal
Pulses	Khesari dal
Bengal gram Flour	Starch powder,maize flour
Ghee	Vegetable ghee,Animal fat,sweet potato
Milk	Water
Tea	Used tea leavels
Pepper	Papaya seeds
Clove	Clove after extraction
Dhaneya	Saw dust,horse dung
Red Chelli Powder	Saw dust,Powdered Red Brick
Honey	Sugar,Water
Turmeric	Yellow Soil

HARMFUL AFFECTS OF FOOD ADULTERANTS

Increases the impurity in food: Food adulteration increases the impurity in the foods items thus making it imperfect to consume. Consumption of adulterated food for long will have both short term and long term impact on our health

Lack of nutritional value: Adulterated food is of low quality and has no or very less nutritional values. Also, certain adulterated food has a different taste too. By purchasing and consuming adulterated food, we are compromising on our health and taste



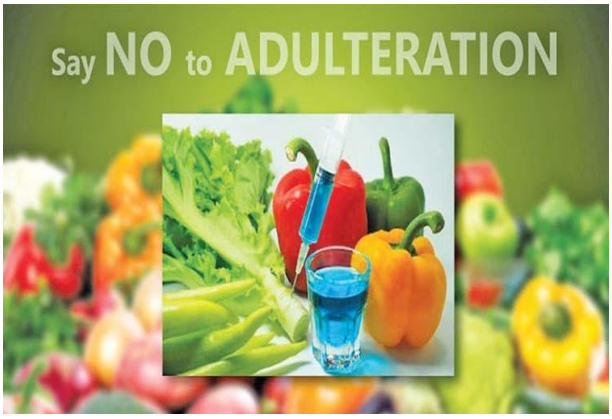
Leads to various diseases: Due to the consumption of adulterated food, we can get various chronic diseases like Liver Disorder, Diarrhoea, Stomach Disorder, Lahyrism Cancer, Vomiting, Dysentery, Cancer, Joint Pain, Heart Diseases, Food Poisoning etc

Here are certain safety tips to avoid Adulteration

1. Avoid dark coloured, junk and other processed foods.
2. Make sure to clean and store all the grains, pulses and other food products.
3. Wash fruits and vegetables thoroughly in running water before they are used.
4. Check if the seal is valid or not, before buying food products like milk, oil and other pouches.
5. Always make sure to check and buy products having an FSSAI-validated label, along with the license number, list of ingredients, manufactured date, and its expiration.

The increasing number of food producers and the outstanding amount of import foodstuffs enables the producers to mislead and cheat consumers. To differentiate those who take advantage of legal rules from the ones who commit food adulteration is very difficult. The consciousof consumers would be crucial. Ignorance and unfair market behavior may endanger consumer health and misleading can lead to poisoning. So we need simple screening, tests for their detection.

In the past few decades, adulteration of food has become one of the serious problems. Consumption of adulterated food causes serious diseases like cancer, .diarrhoea., , .asthma., .ulcers., etc. Majority of fats, oils and butter are paraffin wax, castor oil and hydrocarbons. Red chilli powder is mixed with brick powder and pepper is mixed with dried papaya seeds. These adulterants can be easily identified by simple



EXPERIMENTS BASED ON FOOD ADULTERANTS

EXPERIMENT NO.1

AIM:To detect sugar solution in honey

PART ONE

MATERIALS REQUIRED

Transparent glass of water,honey,

PROCEDURE

Take a transparent glass of water

Add a drop of honey into the water

OBSERVATION

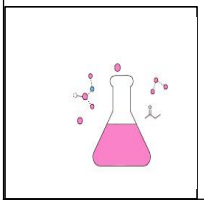
It disperses in water

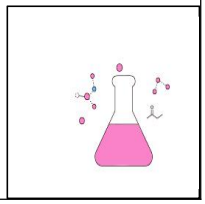
RESULT

The honey contains sugar in it

WHAT HAVE WE LEARNT

Honey never disperses in water because of its viscosity but when it contains sugar it disperses in water.Hence we can find out whether honey is adulterated or not





PART TWO

MATERIALS REQUIRED

Cotton,honey,matchstick

PROCEDURE

Take a piece of cotton

Dip it in a bottle of honey

Light it up with a matchstick

Now take another piece of cotton and dip it in another bottle of honey

Light it up with a matchstick

OBSERVATION

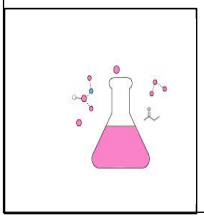
The first cotton will produce a cracking sound and the second one burns

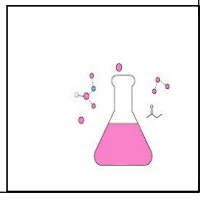
RESULT

The honey used in the first apparatus contains sugar while the second does not

WHAT HAVE WE LEARNT

If the cotton is dipped in adulterated honey and when it is lighted up with a matchstick it produces a cracking sound and the unadulterated honey burns up





EXPERIMENT NO.2

AIM:To detect metanil yellow in turmeric powder

MATERIALS REQUIRED

Turmeric powder,transparent glass,water,concentrated HCL

PROCEDURE

Take some turmeric powder in a transparent glass

Add few drops of water and concentrated HCL into it

Shake it vigorously

OBSERVATION

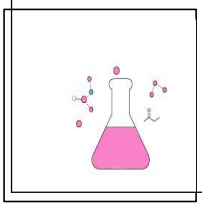
Solution turns pink in colour

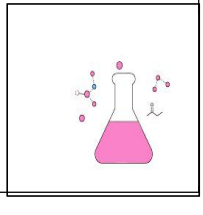
RESULT

Turmeric contains metanil yellow

WHAT HAVE WE LEARNT

When we mix turmeric water and concentrated HCL and shake it vigorously in a transparent glass we get a pinkish solution which shows that the turmeric is adulterated





EXPERIMENT NO.3:

AIM: TO DETECT THE PRESCENCE OF ADULTERANTS IN GHEE,FAT AND OIL

MATERIALS REQUIRED

Test-tube,acetic anhydride,conc.HNO3.

PROCEDURE

Common adulterants present in ghee and oil are paraffin wax, hydrocarbons, dyes and argemone oil. These are detected as follows :

Adulteration of paraffin wax and hydrocarbon in vegetable ghee:

Heat small amount of vegetable ghee with acetic anhydride.

Adulteration of dyes in fat :

Heat 1mL of fat with a mixture of 1mL of conc. sulphuric acid and 4mL of acetic acid.

Adulteration of argemone oil in edible oils:

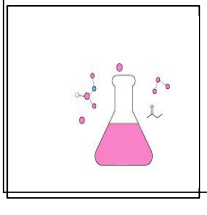
To small amount of oil in a test-tube, add few drops of conc. HNO3 and shake.

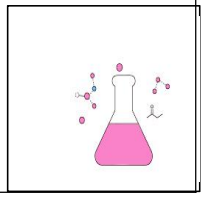
RESULT

Droplets of oil floating on the surface of unused acetic anhydride indicates the presence of wax or hydrocarbons.

Appearance of pink or red colour indicates presence of dye in fat.

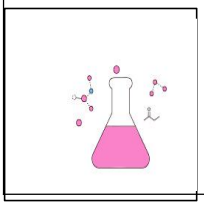
Appearance of red colour in the acid layer indicates presence of argemone oil.

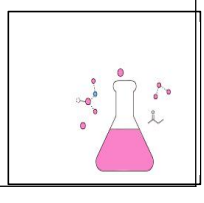




CONCLUSION

Food adulteration deterrence is complex because of its unpredictable nature. Significant efforts have been made recently in many aspects by food companies, authorities and academics. Beside finding new analytical approaches, food manufacturers are also improving the knowledge of their supply chain in term of length (number of tiers), complexity and vulnerability. Food chain transparency and full raw material traceability is primordial for an effective food fraud prevention system. A consortium regrouping different organizations has been created to work on new platforms designed to be compatible between all partners, such as food manufacturers, raw material suppliers, and even authorities. Ideally, the system should provide supply chain transparency in real-time, with end-to-end product traceability. New emerging technologies such as the blockchain should further help to reach this goal, increasing accountability and thus providing to suppliers, regulators and consumers higher trust on food integrity. Recent alliances have been formed with a computer organization to create a standard-based method of collecting data about the origin, safety and authenticity of food. Initial application showed that the blockchain technology could reduce the time to trace a package of specific raw materials (e.g. fruits) from the farm to the store from days to few seconds.





BIBLEOGRAPHY

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Food Adulteration - Types, Causes, Methods of Food Adulteration (byjus.com)