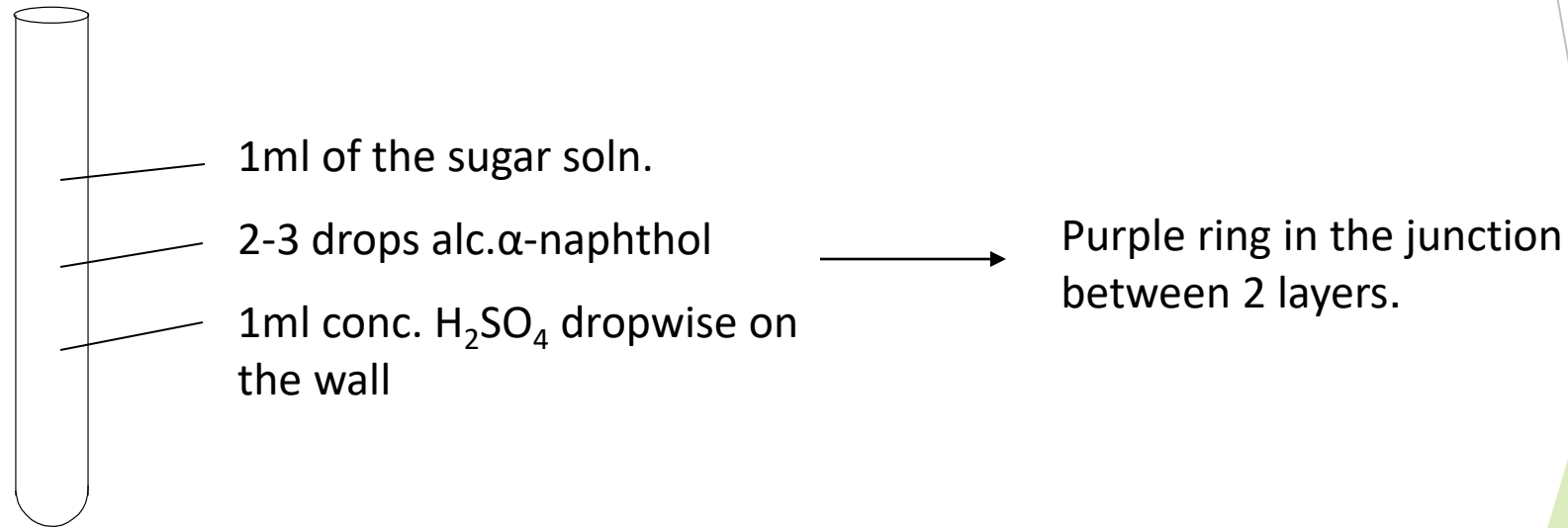


# Carbohydrate

- ▶ Phytochemistry

# Identification of Monosaccharides (glucose & fructose)

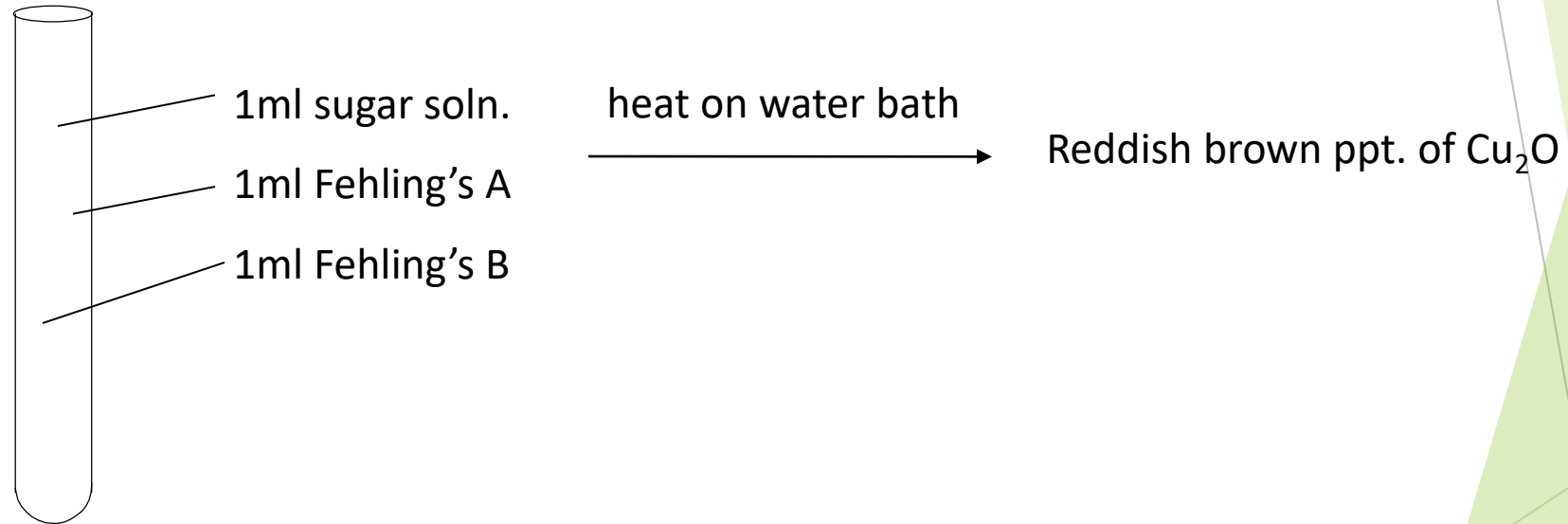
## 1- Molisch's test:



This test gives positive result with all carbohydrates.

# Identification of Monosaccharides (Glucose & Fructose)

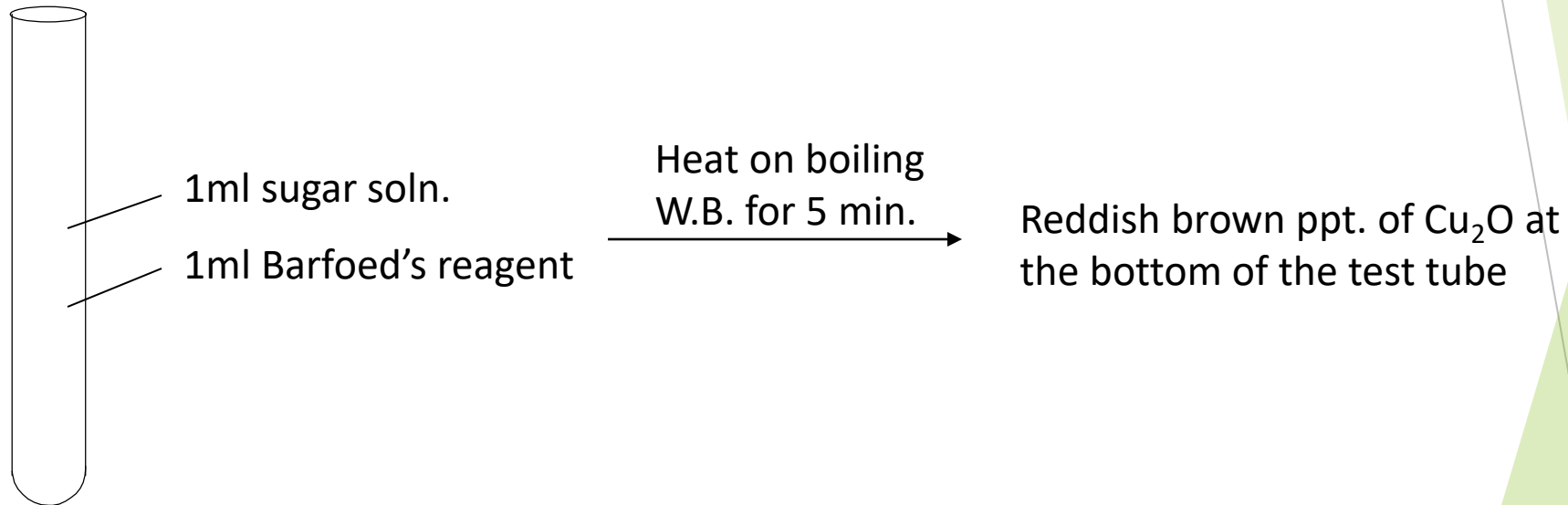
## 2- Fehling's test:



This test gives a positive result with reducing sugars  
(Monosaccharides and reducing disaccharides)

# Identification of Monosaccharides (glucose & fructose)

## 3- Barfoed's test:

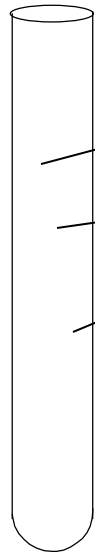


This test gives a positive result with both glucose and fructose  
(both are monosaccharides)

what about disaccharides?

# Identification of Monosaccharides (glucose & fructose)

## 4- Osazone test:

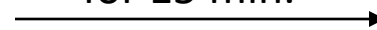


5ml sugar soln.

0.5g Phenylhydrazine HCl

1g Sodium acetate

Heat on W.B.  
for 15 min.



Yellow ppt. on hot, when  
examined under microscope  
shows tufts of needles.

Both glucose and fructose give the same osazone  
Why?

# Identification of disaccharide

- Disaccharides includes:
  - 1) Sucrose.
  - 2) Lactose .
  - 3) Maltose.
- 1) Sucrose
- Physical characters:
- White crystalline , sweet taste , soluble in water and insoluble in alcohol.

## Test for identity:

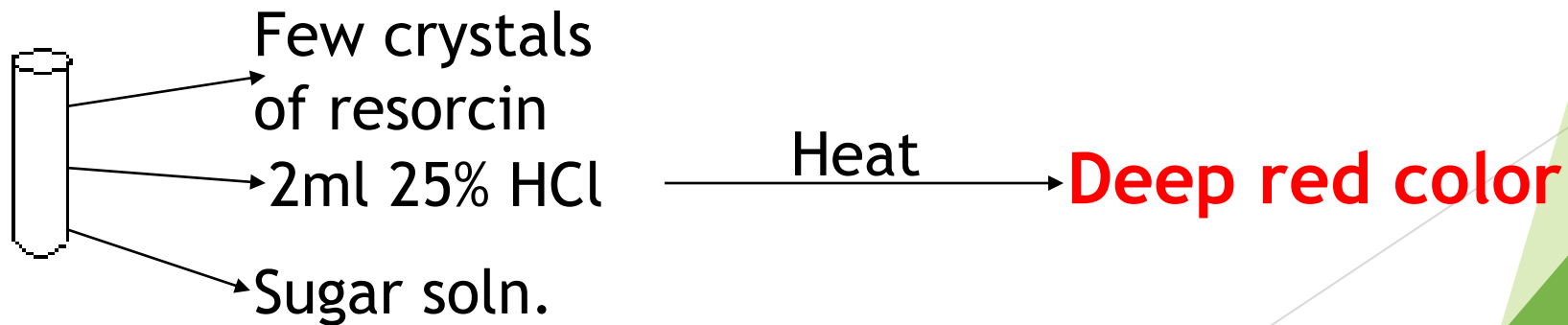
**Molisch'test:** Positive( Purple ring at the junction between the two layers)

**Reduction of Fehling's soln. :** Negative

( No redprecipitate).....Why?!

## **Special test:**

### **Resorcinol test:**



## 2) Lactose:

### Physical characters:

White crystalline , slightly sweet , soluble in water and insoluble in alcohol.

### Tests for identity:

Molisch's test: Positive

Reduction of Fehling's soln. : Positive (Red precipitate)

Reduction of Barfoed's soln. : Red precipitate after more than 5 mins.

Osazone test : It gives characteristic crystals in the form of tufts of needles after heating for 45 mins on cold.



### 3) Maltose:

#### *Physical characters:*

White crystalline , slightly sweet , soluble in water and insoluble in alcohol.



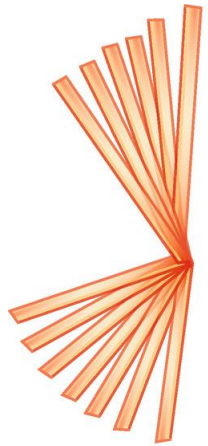
#### *Tests for identity:*

*Molisch's test* : Positive.

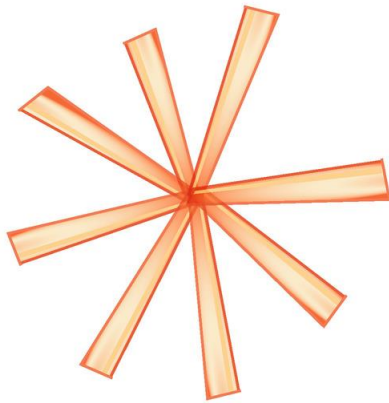
*Reduction of Fehling's soln.*: Positive.

*Reduction of Barfoed's soln.*: Red precipitate after more than 5 mins.

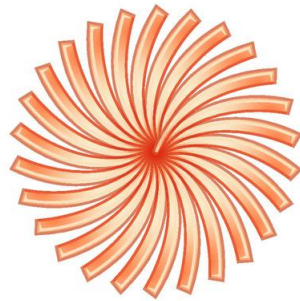
*Osazone* : It gives crystals of osazone in the form of radiating plates or broad needles after heating for 45 mins on cold.



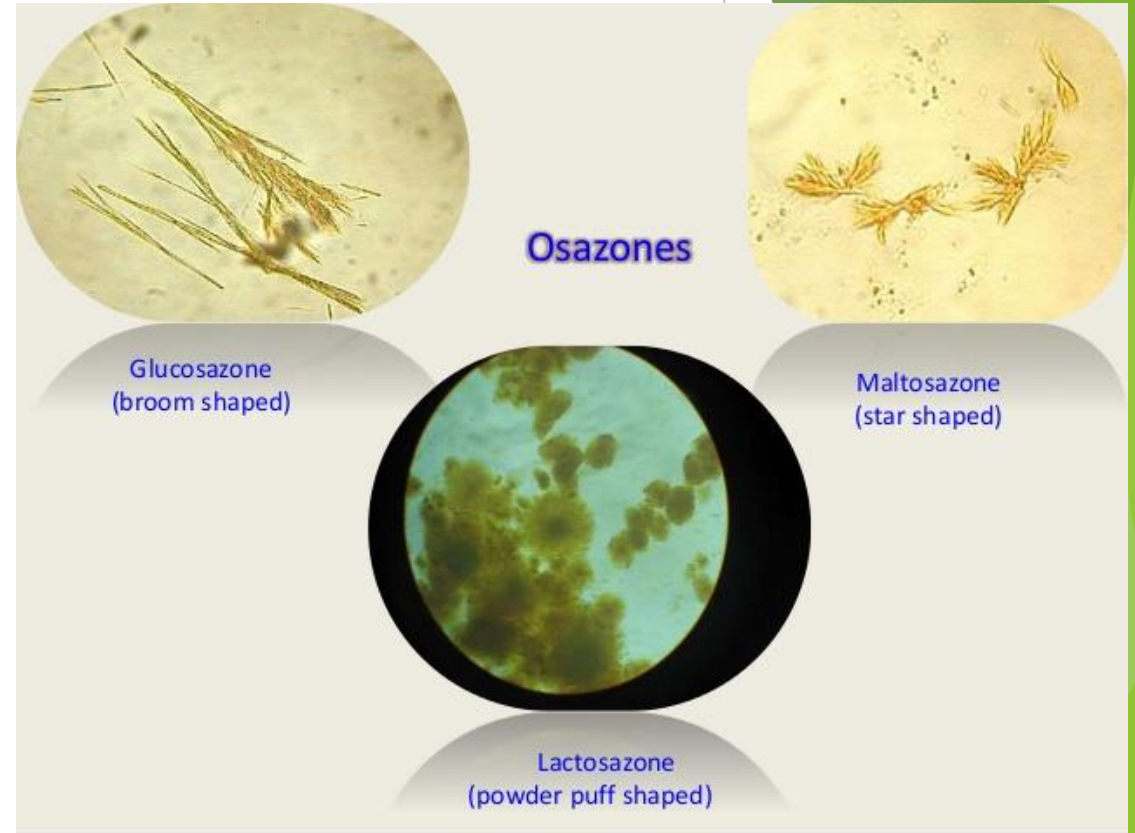
Needle shaped  
crystals  
[Glucosazones]



Sun flower shaped  
crystals  
[Maltosazone]



Cotton shaped  
crystals  
[Lactosazone]



Glucosazone  
(broom shaped)

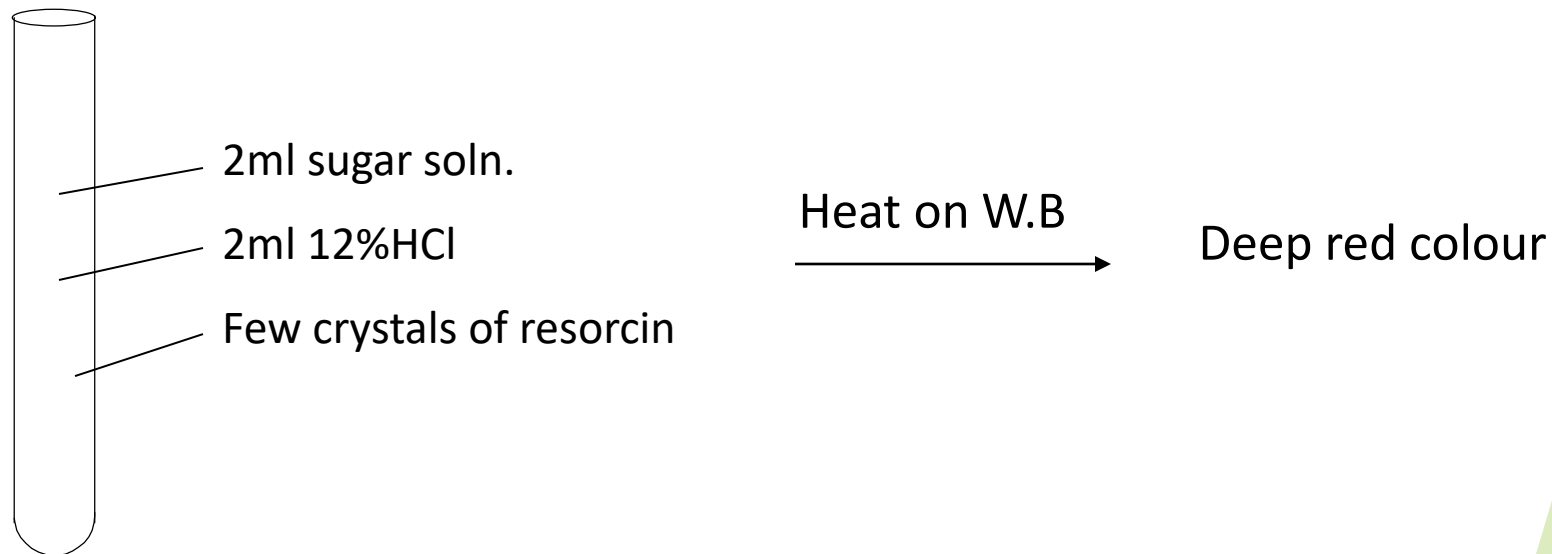
Maltosazone  
(star shaped)

Lactosazone  
(powder puff shaped)

Osazones

# Identification of Monosaccharides (glucose & fructose)

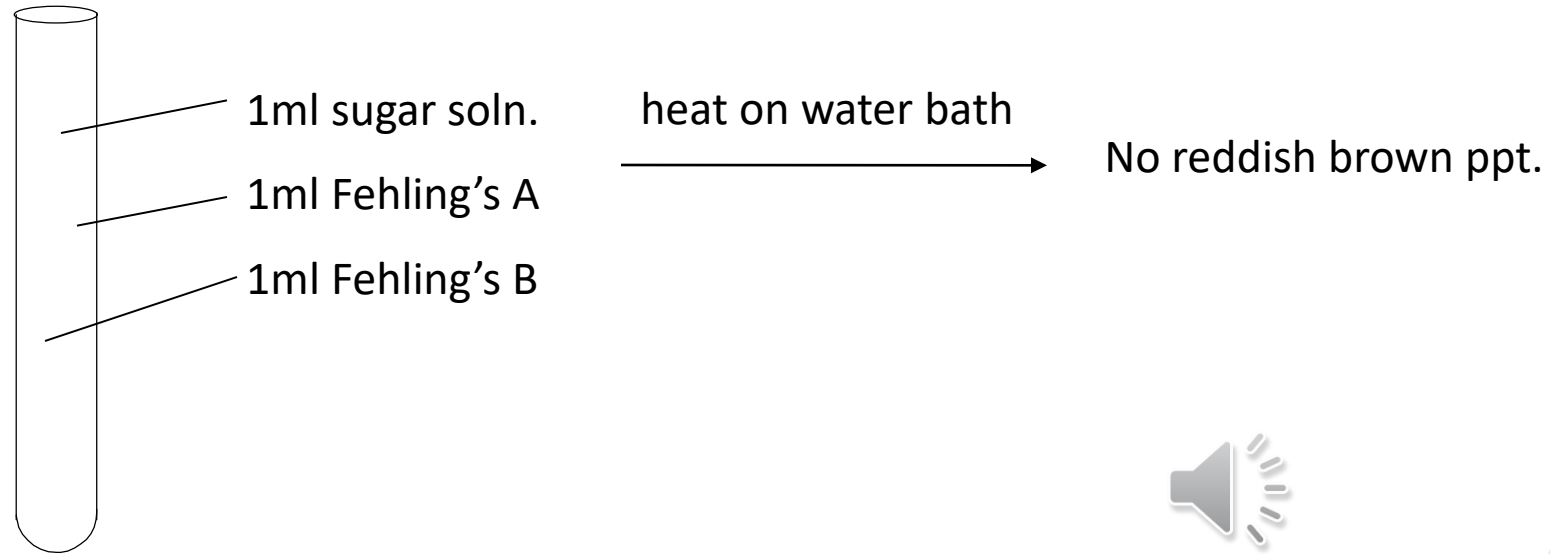
## 5- Resorcin (Selwianoff's) test:



This test gives a positive result with fructose but not with glucose.

# Identification of Polysaccharides (Starch, Gum Acacia, Gum tragacanth & Agar-agar)

## 1- Fehling's test:



Non-reducing carbohydrate

# Identification of Polysaccharides

## (Starch, Gum Acacia, Gum tragacanth & Agar-agar)

### 2- Test with N/50 I<sub>2</sub> soln. :



2 ml of the carbohydrate soln. (shake)

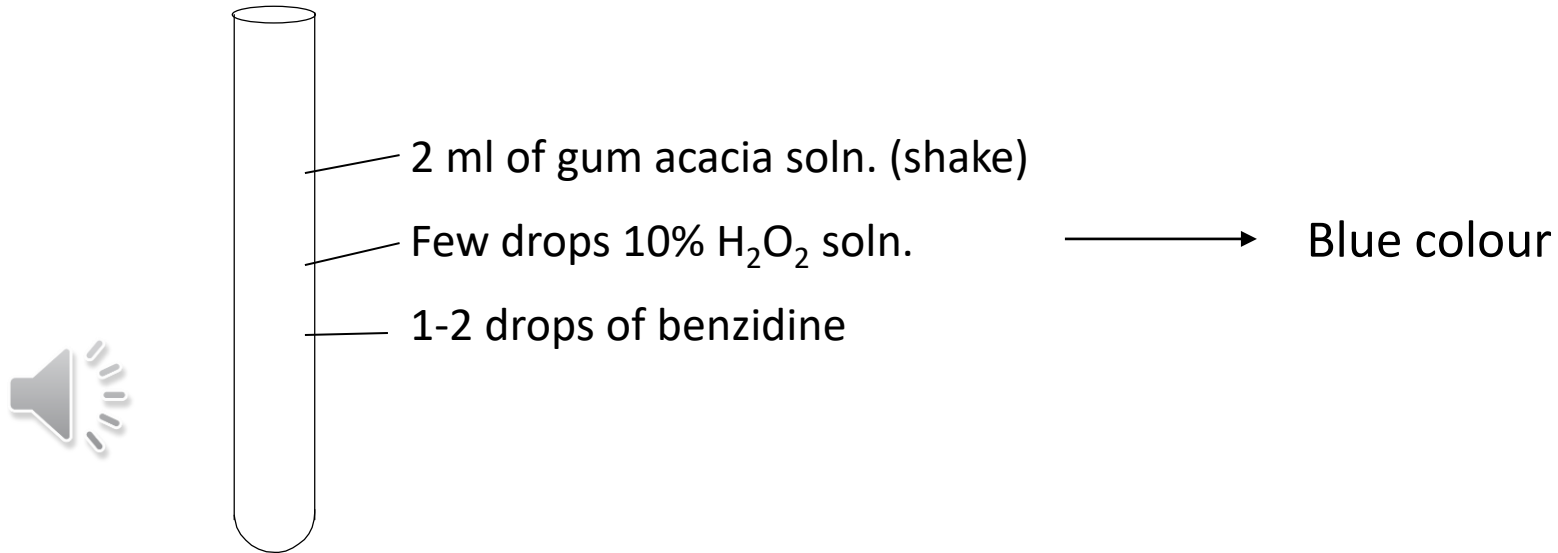
N/50 I<sub>2</sub> soln. (amount?)



Starch	→	Blue colour
Gum tragacanth	→	Olive green colour
Agar-agar	→	Brick red particles
Gum acacia	→	No change in I <sub>2</sub> colour

# Identification of Polysaccharides (Starch, Gum Acacia, Gum tragacanth & Agar-agar)

## 3- Benzidine test (oxidase test) :



A diagram of a test tube with three horizontal lines indicating the addition of reagents. To the left of the test tube is a speaker icon. To the right of the test tube, an arrow points from the reagents to the text 'Blue colour'.

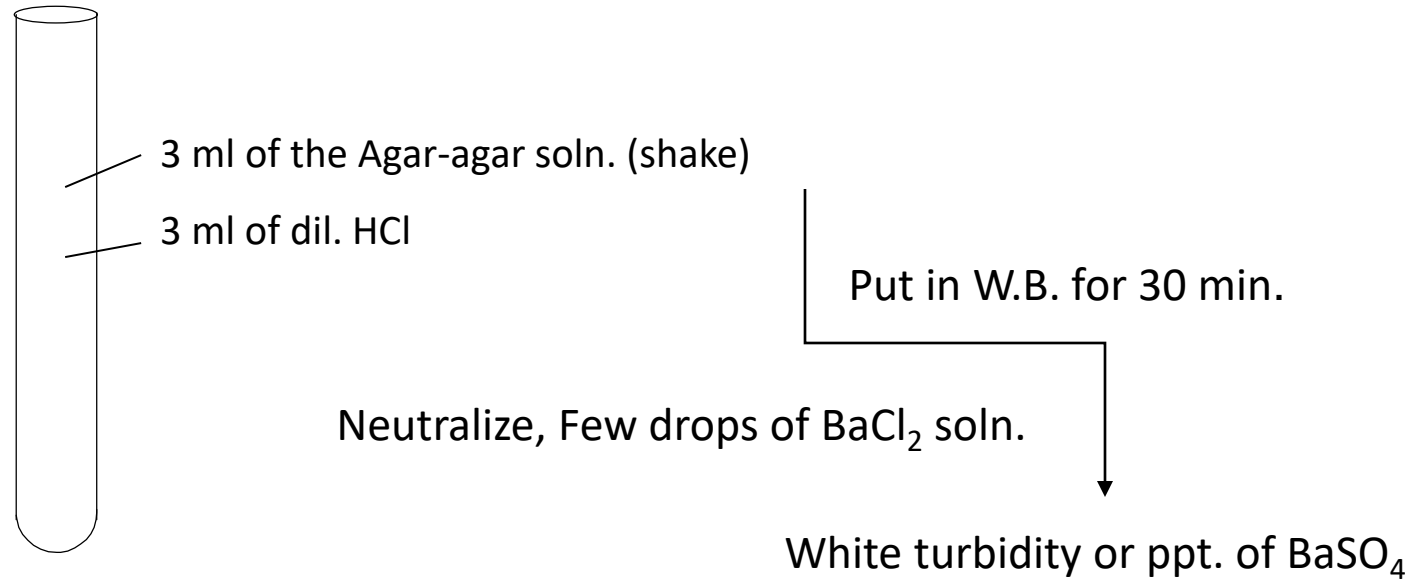
- 2 ml of gum acacia soln. (shake)
- Few drops 10% H<sub>2</sub>O<sub>2</sub> soln.
- 1-2 drops of benzidine

→ Blue colour

This test is specific for gum acacia

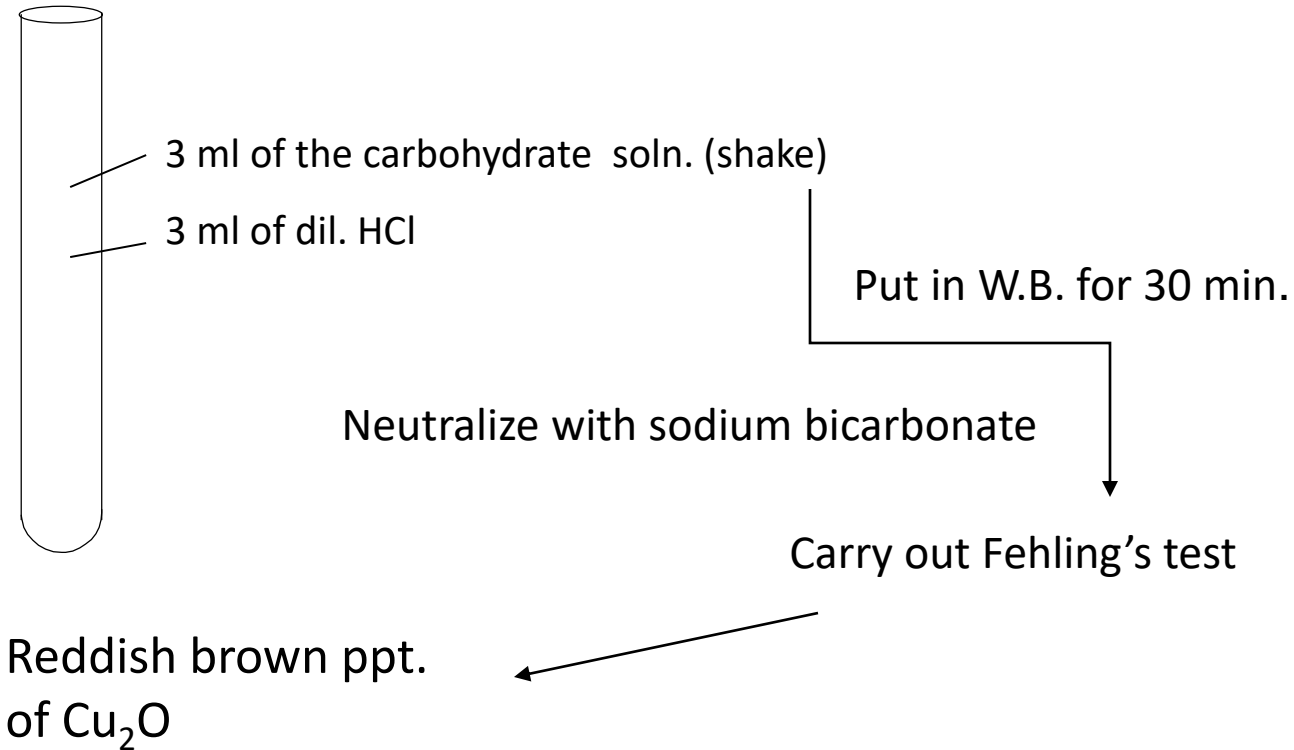
# Identification of Polysaccharides (Starch, Gum Acacia, Gum tragacanth & Agar-agar)

## 4- BaCl<sub>2</sub> Test (test for sulfate ions) (Agar-Agar):



# Identification of Polysaccharides (Starch, Gum Acacia, Gum tragacanth & Agar-agar)

## 5- Hydrolysis then Fehling's (confirmatory test):





**Thank you**

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.