



Lect.4.

Six Experiment : To distinguish between pentose and hexoses.

Bial's Test

Object: To distinguish between pentose and hexoses.

Principle

This test is specific for pentose's, and the compounds containing pentose's and thus useful for the determination of pentose sugars. They get converted to Furfural, in the presence of ferric ion Orcinol and Furfural to give a blue-green colored complexes.

Reagent

(Bail's reagent(orcinol, HCl ,FeCl₃(5- methyl resorcinol

Procedure:

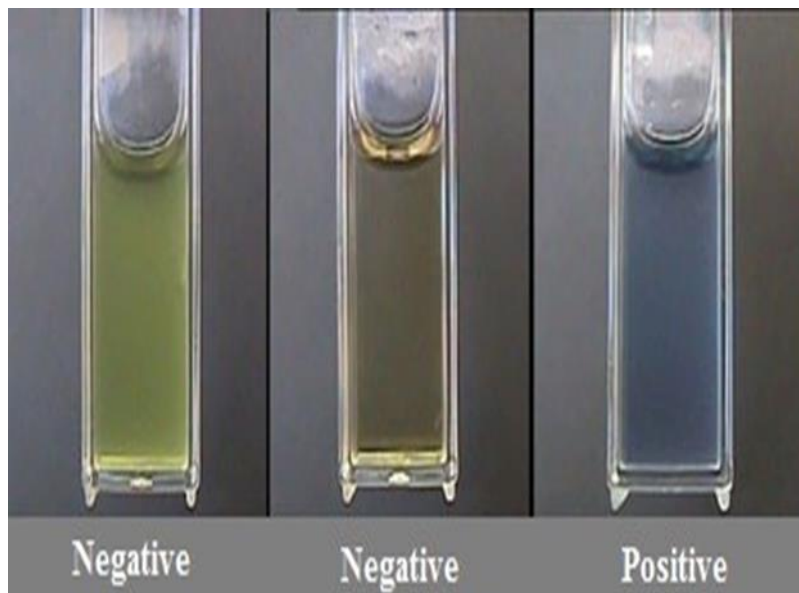
1-Add 2 ml Of Carbohydrates solution.

2- Add 2ml Bail's reagent.

3-Heat in a boiling water bath until bubbles of gas rise to the surface, Formation of bluish green solution and precipitate indicates the presence.



Lect.4.



Bial's Test

Note: The formation of a bluish product. All other colors indicate a negative result for pentoses.



Lect.4

Iodine Test: (For Polysaccharides).

Object: To detect the Polysaccharides by Iodine Test.

Theory: Iodine Test is qualitative test of Polysaccharides ,by this test we can also different between starch , dextrin and glycogen.

Principle:

Iodine (iodine-potassium iodide, I_2KI) staining distinguishes starch (a polysaccharide) from monosaccharide's, disaccharides, and other polysaccharides. this test is that starch is a coiled polymer of glucose. Iodine interacts with these coiled molecules and becomes bluish black. Other non-coiled carbohydrates do not react with iodine. Therefore, a bluish black color is a positive test for starch, and a yellow- brown color (i.e., no color change) is a negative test for starch. Glycogen, the common polysaccharide in animals, has a slight difference in structure and produces only an intermediate color reaction. Test each of the known sugars for the presence of starch.



Lect.4.

Reagent

1-2% Lugol's iodine solution consist of 2.5gm iodine and 7.5gm potassium iodide dissolved in 500ml water . iodine is added slowly until a deep yellow is
Procedure.

2-% 10NaOH 3-concentrated HCl 4- concentrated H₂SO₄ 2-10%

Procedure

1-Add 2 ml of Carbohydrates solution(Mono saccharide's ,di saccharide

2- Add 2ml of poly saccharide's.

3-add 2-3 drop of Iodine solution.

4-Heat in a boiling water bath.

Observation

Starch give a blue color with iodine.

dextrin give a purple color with iodine.

glycogen give a brown color with iodine.

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Starch give a blue color with iodine



When add NaOH



Lect.4

Comparison between glycogen & starch.

Glycogen	Starch
Animal original	Plant original
Give red color with iodine	Give blue color with iodine
Highly branch than starch	Branch molecule branching
Branch after 12-18 glucose unit	Branch after 24-30 glucose unit

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Lect.4.

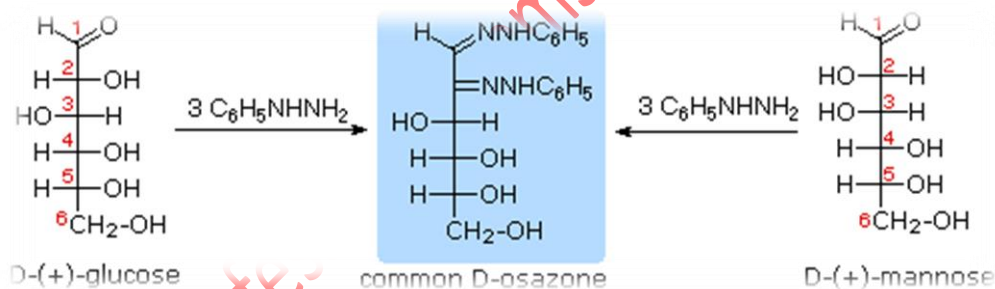
Eight Experiment

OSAZONE Test

Object: To detect the reducing sugars in the given solution by OSAZONE Test.

Theory

OSAZONE Test is positive for reducing Carbohydrates Reducing disaccharides and many mono saccharides can be identified with the formation produce OSAZONE crystal , on reaction with phenyl hydrazine.

Principle:

A solution of reducing sugar when heated with phenyl hydrazine, characteristic yellow crystalline compounds called osazone are formed. Simple sugars like glucose, fructose and mannose produce the same osazone because of the similarities in their molecular structures.



Lect.4.

Reagent

1-Phenyl hydrazine hydrochloride.

2-sodium acetate .

3- Glacial acetic acid.

Procedure:

Add 10 drops of glacial acetic acid to 5 ml of sugar solution in test tube. Then add a knife point of phenyl hydrazine hydrochloride and double the amount of sodium acetate crystals. Mix and warm a little to see that are dissolved. Filter the solution in another.

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