**Lab sheet #4**

**-Carbohydrates-I-**

**-Objective:**

1. To identify the carbohydrate from other macromolecules.
2. To detect the presence of reducing sugars.
3. To distinguish between reducing mono-disaccharides, and non-reducing di-polysaccharides.
4. To distinguish between pentose monosaccharide and hexose monosaccharide (to detect pentoses).
5. To distinguish between aldoses and ketoses (to detect ketoses).

**-Methods:**

**1-Molisch test:**

1. Two ml of a sample solution is placed in a test tube.
2. 0.5 ml drops of the Molisch reagent (which α-napthol in 95% ethanol) is added.
3. The solution is then poured slowly into a tube containing two ml of concentrated sulfuric acid so that two layers form, producing violet ring appear as liaison between the surface separations.

**2-Benedict's test:**

1. One ml of a sample solution is placed in a test tube.
2. Two ml of Benedict's reagent is added.
3. The solution is then heated in a boiling water bath for five minutes..

**3- Barfoed’s test:**

1. Place one ml of a sample solution in a test tube.
2. Add 3 ml of Barfoed's reagent (a solution of cupric acetate and acetic acid).
3. Heat the solution in a boiling water bath for 6 minutes (after the 3 min check the tubes).

**4- Bial’s test:**

1. Put 2 ml of a sample solution in a test tube.
2. Add 2 ml of Bial's reagent to each tube.
3. Heat the tubes gently in hot water bath. If the color is not obvious, more water can be added to the tube.

**5- Seliwanoff's test:**

1. 0.5 ml of a sample solution is placed in a test tube.
2. Two ml of Seliwanoff's reagent (a solution of resorcinol and HCl) is added.
3. The solution is then heated in a boiling water bath for two minutes.

**-Results:**

**1-** **Molisch test:**

|  |  |
| --- | --- |
| **Observation** | **Tube** |
|  | Glucose |
|  | Lactose |
|  | Starch  |
| **Conclusion:** ……………………………………………………………………….. |

**2- Benedict's test:**

|  |  |
| --- | --- |
| **Observation** | **Tube** |
|  | Glucose |
|  | Lactose |
|  | Sucrose  |
| **Conclusion:** ……………………………………………………………………….. |

**3- Barfoed’s test:**

|  |  |
| --- | --- |
| **Observation** | **Tube** |
|  | Glucose |
|  | Lactose |
|  | Sucrose  |
| **Conclusion:** …………………………………………………………………………. |

 **4- Bial’s test:**

|  |  |
| --- | --- |
| **Observation** | **Tube** |
|  | Glucose |
|  | Ribose  |
| **Conclusion:** …………………………………………………………………………. |

 **5- Seliwanoff's test:**

|  |  |
| --- | --- |
| **Observation** | **Tube** |
|  | Glucose |
|  | Fructose  |
| **Conclusion:** ……………...………………………………………………………….. |