University of Baghdad

College of Science for Women

Department of Chemistry

BIOCHEMISTRY LAB

(For Biology students/First class)

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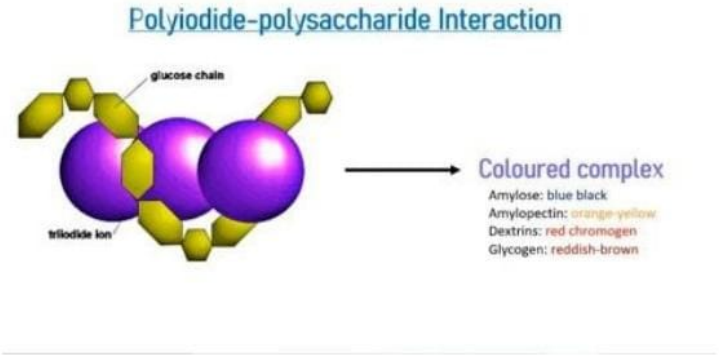
5. Iodine Test: (General test of polysaccharides)

The iodine test is a common method for detecting the presence of polysaccharides, particularly starch, in a sample. The test is based on the interaction (adsorb I_2) between iodine and the helical structure of polysaccharides, which results in a color change when the iodine forms a complex with the polysaccharide.



Method:

- 1 mL of the fresh starch solution & 1 drop of the iodine solution.
- A dark blue color indicates a positive test for starch.
- If the yellow color of the iodine reagent simply becomes diluted, no starch is present.
- Record the observation as positive (blue) or negative (yellow).

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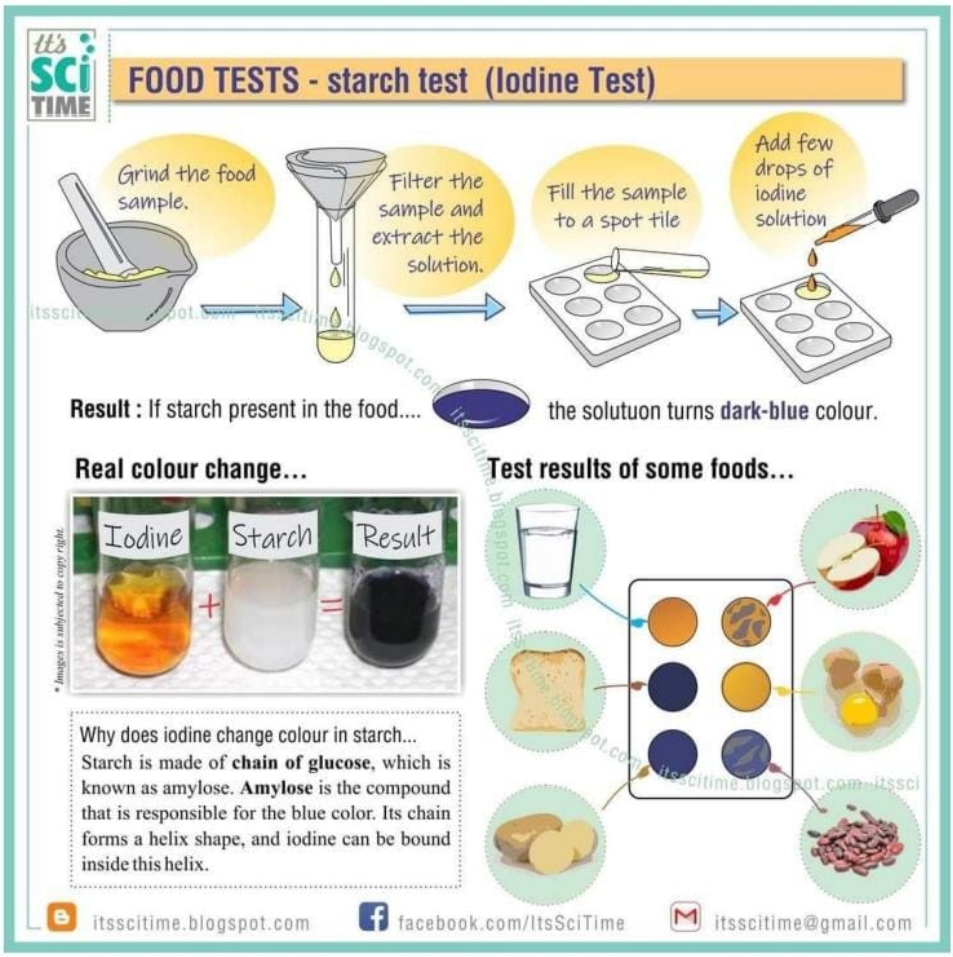
Note: On heating (poly saccharide-Iodine) complexes losses blue colour because of dissociating the complex, while on cooling the blue colour again appears due to re-association of complex. Also Iodine test affected by base and acid medium. Below equation show when mineral acid is added to the basic medium, iodine is released again and a blue color appears.

$$3\,I_2 + 6\,NaOH \longrightarrow 5\,NaI + NaIO_3 + 3\,H_2O$$

$$NaIO_3 + HCL \longrightarrow HIO_3 + NaCL$$
$$NaI + HCL \longrightarrow HI + NaCL$$
$$HIO_3 + 5\,HI \longrightarrow 3\,I_2 + 3\,H_2O$$


FOOD TESTS - starch test (Iodine Test)
Grind the food sample.
Filter the sample and extract the solution.
Fill the sample to a spot tile
Add few drops of iodine solution
Result : If starch present in the food.... the solutuon turns dark-blue colour.
Real colour change...
Iodine
Starch
Result
Test results of some foods...
Why does iodine change colour in starch...
Starch is made of chain of glucose, which is known as amylose. Amylose is the compound that is responsible for the blue color. Its chain forms a helix shape, and iodine can be bound inside this helix.
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