Biology Lab Report 04

Title of Practical	To determine the lipid solution of unknown samples
Module Name	Introduction to Biology
Module Number	SC1143
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Objective:- To become familiar with the glassware

To identify lipid's properties

To identify Sudan iii solution

To determine lipids from lipid test

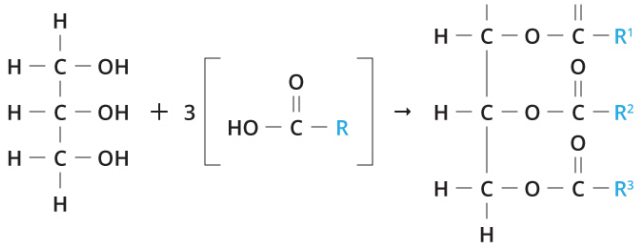
Introduction:-

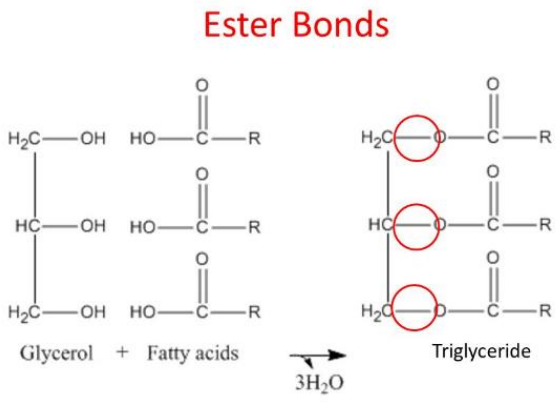
Lipid are classified as organic compound that are relatively in water and soluble in polar solvents such as ether and chloroform. Lipids contain carbon, hydrogen, and oxygen but have far less oxygen proportionally than carbohydrates. Lipids are an important part of living cells. Together with carbohydrates and proteins, lipids are the main constituent of plant and animal cells.

Cholesterol and triglycerides are lipids. Lipids are stored in the body. Unlike polysaccharides and proteins, lipids are not polymers. They lack a repeating monomeric unit. They are made from two molecules and, glycerol and fatty acids.

They may be saturated and unsaturated. A fatty acid is saturated if every possible bond is made with a hydrogen atom, such as three exist no C=C bonds. Saturated fatty acids on the other hand to contain C=C bonds. The fatty acids normally in foods vary in chain, degree of unsaturated and position on the glycerol molecule.

Fatty acids are most often stored and transported as triglycerides as triglycerides, three fatty acids bonded to a glycerol molecule. This bond is called an ester linkage and result from a dehydration synthesis. Test for lipids are based on a lipid's ability to selectively absorb pigments in fat soluble dyes such as Sudan iv.





Material and method:-

Test 01- The grease- spot test for lipids

Material:- Brown paper, water, cooking oil, eyedropper

Method/ procedure:-

1. Obtained a piece of brown wrapping paper from lab instructor.
2. Used an eyedropper to add drop of the simple near a corner of the piece of paper.
3. Added a drop of water near the opposite corner of the paper.
4. Let the fluids evaporate.
5. Looked at the paper as hold it up to a light and observed.

Result:-

A water spot also makes the paper translucent. The difference is that, after drying in air, water is evaporated and the wet spot becomes clear while the lipid spot remains translucent.

But when added cooking oil or something types of lipids to brown paper by using eyedropper that also makes the paper translucent. The different is that, after drying in air, lipid not evaporated and lipid spot remains translucent. So can separate lipids.

Test 02 - The Sudan iv test for lipids

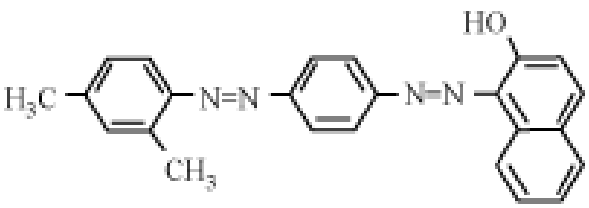
Material:- Test tube, Sudan iv solution, eyedropper, lipids solution

Method/procedure:-

1. Obtained six test tubes and numbered them since 1 to 6.
2. The material was added to each test tubes.
3. Five drops of Sudan iii was added to each of the remaining tubes.
4. The contents were mixed each tube tests.
5. The color was recorded of the tubes, contents in a table.

Result:-

solution	Sudan iii color reaction
Distilled water	Pale water, one layer
Coconut oil	Light orange
Honey solution	Orange, 2 layer
Lipid solution	Top orange, 2 layer
Cream	Rest white
Butter	Orange



Sudan IV

Discussion:-

1. In the grease spot test, both of water and lipids get spot patch. But after about 10 minutes, water was vaporized and lipid was not vaporized. So water is not lipid and lipids can observe in that experiment.

2. Distilled water is the control treatment of the lipid experiment.
3. When we added 5 drops of Sudan iii to solution, that color of water changes in to pale orange.

4. The chemical Sudan iii is not soluble in water. Because water has not lipids. It makes one layer and, it gives pale orange.
5. A positive test for lipids will stain the lipids red.
6. When added Sudan iii solution to lipids solution, that gives top orange color and 2 layer. Because it has more lipids.

7. When added Sudan iii to coconut oil solution and butter, that gives orange color due to its have lipids solution. But if we added more few drops of Sudan iii to coconut oil and butter, the orange color gets more darker.
8. When added Sudan iii to cream, that gives very little reddish top and the rest white.

9. In honey solution also there are some lipids, but because when we added Sudan iii it, that cannot see the color change dye absorption.
10. Butter solution takes few times to absorb the dye, to color up the lipid molecule.

11. If we kept it about 1 hour or 2 hour, we can visualize the orange color in butter molecule.

12. Firstly when we added water and second added coconut oil in the test tube and, after added in to Sudan iii solution, that can see 2 layers which are water and oil. Sudan iii was did soluble only coconut layer. Oil or Sudan iii was not mix in water. Because water has high density than oil and water has not lipids.

Conclusion:-

An unknown sample can be tested under sudan iii, whether there are lipids. If lipids are present, the sample will show a color corresponding to the lipid test. Also any solution can be tested grease spot test, whether there are lipids. If lipids are present, will show spot patch in the brown paper.

Reference:-

Edwards S, Stribling S, Pyatt S, Kimberly M. Reference measurement procedure for total glycerides by isotope dilution GC-MS. Clin Chem. 2012 58(4):768-776

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