HISTOCHEMICAL DETECTION OF LIPIDS

Dr Poonam kumari
Dept Of Zoology
M.Sc Semester II CC 09

Lipids vary greatly from the structural and molecular point of view. They are soluble in organic solvents and insoluble in water. Histochemically, lipids can be classified according to their hydrophobicity and hydrophilicity, or based on the presence or absence of esters and amides. Lipids are essential for the normal function of the organism, playing important structural, metabolic, or endocrine roles. In this regard, significant amounts of lipids are present in adipose tissue, in sebaceous and adrenal glands, and in the myelin sheaths of central and peripheral nerve fibers . Lipids can be affected by several pathological conditions. In this context, the histochemical identification of lipids plays an important role in histopathological diagnosis (e.g., atherosclerotic lesions, liposarcoma and demyelinating diseases) as well as in research.

Lipids Staining

This technique is dependent on dyes that are soluble in lipids.

Some of the most common dyes used include:

- Sudan VI
- Sudan black
- Oil Red O
- Nile blue

Lipid staining is a useful technique that is used for demonstrating intracellular lipids in various tissue sections.

Principle

For this technique, the dye is more soluble in the lipid, which allows it to be more demonstrated than in the vehicular solvent. The dyes used in this technique are all interchangeable, which means that they can be substituted for each other for the staining process.

Staining procedure

Requirements/reagents

- ORO (Oil Red O) solution
- Glycerine jelly mounting medium

Procedure

- Cut the sample to obtain sections of between 8 and 10 microns and air dry
- Rinse the section with 60 percent isopropanol
- Stain the section with the Oil Red O working solution for about 15 minutes
- Rinse the specimen with 60 percent isopropanol
- Dip the section in Alum hematoxylin a few times in order to stain the nuclei
- Rinse in distilled water
- Mount the specimen in water or in glycerin jelly

Observation

Red color indicates the lipid while blue coloration indicates the nuclei.

Lipid staining technique is useful for showing the normal distribution of lipids as well as disease-related lipid accumulation.