Estimation of Nitrate in water

Nitrate considered as the most important Nitrogen compounds. Its importance is due to its rule in protein synthesis and structure.

There is a relationship between nitrogen melting in water and temperature, these 2 factors connected by opposite relation.

Nitrogen form in water:

The nitrogen present in water environment in 2 forms:

- Organic Nitrogen:
  (60-80%) from this type consist of free amino acid and proteins.
- Inorganic Nitrogen:
  It present ether in form Ammonia NH_3, Nitrate NO_3, or Nitrite NO_2.

Nitrate Source:

1. Lightning.
2. Nitrogen organic fertilizers.
3. Oxidation of organic compounds by bacteria.
4. Home and industrial products that polluted with nitrogen compounds.
5. All different burning procedures contain nitrogen oxides

Importance of Nitrate:

- Increase of nitrogen concentration in water beside presence of phosphorus lead to Eutrophication process.
- If the nitrate concentration increased in portable water to 10 mg/l this lead to the blue body disease.
- Nitrogen in water may convert to Nitrosamine by the effect of bacteria, this material may cause malignant disease or converted to hydroxylamine and causes genetic mutation

Procedure:

1. Take 50ml from the sample in beaker.
2. Add 1ml from HCL (1N) to prevent reduction process.
3. Read on wavelength 220 nm (Organic material + Nitrate), then on wavelength 275 nm (Organic material) then subtract the second absorption value from the first.

4. Prepare stock solution by dissolve (622.8 mg) from KNO_3 in (1L) distilled water, so that each (1 ml) from comparable solution contain (100 Microgram) Nitrogen.

$$\frac{100}{1000} = 0.1 \text{ mg N.}$$