### 1.8.2 Potentiometric method

The potentiometric determination of Mg is performed by complexometric titration using EDTA as titrant and murexide or Eriochrome black T as indicator. This method is affected by several other metal ions. The solution is stirred magnetically, until colour changes from pink to pure blue (Vahl *et al.*, 2010).

### 1.8.3 Colorimetric methods

There are three common colorimetric methods that are used in magnesium determination including Calmagite, Formazan dye and Xylidyl blue methods (Millart *et al*., 1995; Andrusishina, 2010). The Calmagite method, as its name implies, makes use of calmagite dissolved in water along with other chemicals dissolved together with it. Magnesium reaction with Calmagite produces a red-violet color that can be read at 532nm using a colorimeter. One restriction of this method is that the colored chelate is stable for only 30 minutes, therefore colored solution must be read immediately. The magnesium standard is made by dissolving 44.61g of magnesium iodate tetrahydrate in 1L of water. Well known interferences with this method can be prevented by adding chemicals to preparation including ethelyne glycol tetraacetic acid to prevent calcium interference caused by calcium binding to calmagite. Furthermore, cyanide is also added to preparation in order to prevent other metals interferences (Sharma *et al.*, 2007; Andrusishina, 2010).

Another method is the Formazan dye which is a dry-slide method which uses a multi-layered reagent that is magnesium sensitive. It is also imprinted with calcium chelators in order to prevent erroneous results. Magnesium, from the patient's sample, is