TITRATION

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Inorganic Chemistry
Department of Chemistry

L.S COLLEGE MUZAFFARPUR
B. R. A. BIHAR UNIVERSITY
Dr. Priyanka

Introduction

- A chemical test is a qualitative or quantitative procedure designed to prove the existence of, or to quantify, a chemical compound or chemical group with the aid of a specific reagent.
- A presumptive test is specifically used in medical and forensic science.

- Pharmaceutical analysis is the quantitative measurement of the active ingredient and related compounds in the pharmaceutical product[1].
- These determinations require the highest accuracy, precision, and reliability because of the intended use of the data as in:

1.Manufacturing control (identify drug in formulation),

2.Stability evaluation (determine the impurity and degradation products in the stability study), and shelf-life prediction.

3.Determination of drugs and their metabolites in biological samples, generally plasma or urine, is important in elucidation of drug metabolism pathways as well as comparing bioavailability of different formulas.

- There are several methods used in chemical analysis starting from simple manual method to complicated and sophisticated ones of these are: titration, spectrophotometric ,HPLC with multi detectors ,…….etc

- **Titration**
- Titration involves the addition of a reactant to a solution being analyzed until some equivalence point is reached. Most familiar one is the acid-base titration involving a color changing indicator. There are many other types of titrations, for example potentiometric titrations.

- **Applications** :

1. Provide standard pharmacopeial methods for the assay of unformulated drugs and excipents and some formulated drugs e.g. those lack strong chromophore
2. Used for standardization of raw materials and intermediates used in drug synthesis.
3. Certain specialist titration such as Karl Fischer

- **Advantages**:

1. Capable of higher degree of precision and accuracy.
2. The method are generally robust
3. Analysis can be automated
4. Cheap to do and not require specialized apparatus

- **Limitations**:

1. Non selective
2. Time consuming if not automated and require greater level of operator skill
3. Require large amount of sample
4. Reaction of standard solution should be rapid and complete[1]