

Pharmaceutical Analysis and its scope

Pharmaceutical Analysis is branch of pure chemistry which involve identification, purification, separation and quantification of different kind of samples.

Sample can be a synthetic pharmaceutical ingredient which involve different active pharmaceutical ingredients(API) or dosage forms/formulations and can be a natural product as biomolecules like protein from animal or phyto-chemicals which obtain from plants.

We can analyse our sample by three broad methods as-

a) Manual method of analysis- As organoleptic properties like taste, odour, texture, colour and appearance can be observe through sense organs.

b) Chemical method of analysis- Different kind of chemical methods are there to analyse our sample. For example different types of titrations are comes under chemical method of analysis as it involves chemical reactions between reagents.

c) Instrumental method of analysis- This involves various instrumental methods to analyse any kind of sample by different instruments like UV-spectroscopy, High performance liquid chromatography, Nuclear magnetic resonance, Infra-red spectroscopy etc.

Pharmaceutical analysis can be divided into two category as-

1. Qualitative Analysis- First priority of any analyst is to identify the sample, qualitative analysis include identification of sample that what kind of chemical moieties are present like structure elucidation and molecular weight determination of molecule present in sample.

2. Quantitative Analysis- This involve estimation of amount/ weight or concentration of constituents present in a sample.

Scopes of Pharmaceutical analysis-

1. In pharmaceutical industry- There are different sectors in pharmaceutical industry as research and development (R&D) and Quality control (QC) in which pharmaceutical analysis is utilises regularly. Different routine analysis of sample can be possible by different techniques of analysis. Raw sample and final product quality, purity, efficacy and safety can be analyse by various methods which are involve in pharmaceutical analysis.

2. In Food industry- As we all know packed food which consumed by consumer should have all parameters like quality, purity and safety which enhance acceptability by consumer. For this it is require to analyse all these parameters for packed food. Different kind of preservatives, colouring, flavouring and sweetening agents are used in packed food which can be a natural or synthetic chemical ingredients so these should analyse qualitatively and quantitatively, for this various kind of analytical techniques can be applicable.

3. In Cosmetic Industry- Preparation of cosmetics, as lipsticks, creams, nail-paints, lotions, shampoo and conditioners etc., play with two things as colour and odour and these colouring agents and fragrances are also build by different chemical ingredients so the quality and quantity of these ingredients should be known which can be analyse by different techniques of analysis.

4. In Environmental study- Pharmaceutical analysis have different techniques which can be applicable in environmental studies as to check pH of rain, river and water resources. Different environmental factors like temperature, humidity etc can be analyse by analytical method. Various organic and inorganic compounds and elements in soil can also be analysed by analysis techniques.

5. In Disease diagnosis- Different diseases can be diagnosed by pharmaceutical analysis techniques like HIV is observed by ELISA method.