

PHARMACEUTICAL ANALYSIS – BP102T

UNIT : III PRECIPITATION TITRATION, COMPLEXOMETRIC
TITRATION, GRAVIMETRY AND DIAZOTISATION TITRATION

CLASS:28

TOPIC: PURITY OF PRECIPITATION

Co-precipitation:

is the carrying down by a precipitate of substances normally soluble under the conditions employed.

Coprecipitation is an important issue in chemical analysis, where it is often undesirable, but in some cases it can be exploited.

In gravimetric analysis, which consists on precipitating the analyte and measuring its mass to determine its concentration or purity, coprecipitation is a problem because undesired impurities often coprecipitate with the analyte, resulting in excess mass.

This problem can often be mitigated by "digestion" (waiting for the precipitate to equilibrate and form larger, purer particles) or by redissolving the sample and precipitating it again.

There are three main mechanisms of coprecipitation: inclusion, occlusion, and adsorption. An **inclusion** occurs when the impurity occupies a lattice site in the crystal structure of the carrier, resulting in a crystallographic defect; this can happen when the ionic radius and charge of the impurity are similar to those of the carrier.

An **adsorbate** is an impurity that is weakly bound (adsorbed) to the surface of the precipitate.

An **occlusion** occurs when an adsorbed impurity gets physically trapped inside the crystal as it grows.

Post-precipitation:

After conversion of analyte into precipitate during digestion period, whatever the

impurities or soluble substances present in mother liquid form a precipitate layer over the primary precipitate of analyte.

This phenomenon is known as post-precipitation.

Ex: In the determination of calcium, we get calcium oxalate precipitate. Besides this magnesium is also present in the form of impurity and convert into magnesium oxalate precipitate over the layer of calcium oxalate primary precipitate layer.