REVIEW OF LITERATURE:

Literature survey is done on different analytical Method development and validation documents available in order to understand the work done till date, approach followed for development and validation. Following are few snap shots of literature reviewed.

Development and Validation of LC Method for the Estimation of Glipizide in Pharmaceutical Dosage Form and Serum.\textsuperscript{7}

The research paper is for development and validation of the reverse phase HPLC method for estimation of the Glipizide content in drug substance as well as from Serum. The method validation is done in line with ICH expectation. Following are the chromatographic conditions of finalized method

Column: Inertsil ODS C-18, 5 µ

Mobile phase: 70:25:5 (Methanol: Water: 0.01 M KH2PO4)

Wavelength: 270 nm

Injection Volume: 20 µl

Flow rate: 1.5 ml/min (Isocratic)

The reported LOD is 15 microgram /ml and LOQ is 45 microgram /ml. Recovery of method is 99.6%. Ultipor N66 Nylon 6,6 membrane filter paper is used for sample filtration.

Observed values of System Suitability parameters: Theoretical Plates 7523.42, tailing factor 1.48, % RSD for accuracy is less than 2.0%. Same analytical method can be used for estimation of Glipizide content in Serum with change in sample preparation.

Development and Validation of RP-HPLC method for simultaneous estimation of Alfuzosin Hydrochloride and Dutasteride in pharmaceutical dosage form\textsuperscript{8}
Research paper is for simultaneous estimation of optimization of Alfuzosin hydrochloride and Dutasteride in Bulk powder and pharmaceutical dosage form. The optimized method has following chromatographic parameters

Column: HiQ Sil, C18HS Column, 4.6mm x 250,5µ

Mobile phase: 90:10, Methanol: Water

Wavelength: 244 nm

Injection Volume: 20 µl

Column Temperature: Ambient

Flow rate: 1.0 ml/min

The retention time of Alfuzosin hydrochloride is at 6.2 min and 4.8 min for Dutasteride. The Accuracy of method is proved by performing the recovery study at 80 %, 100% and 120 % level, recovery is observed as 98.90 % and 99.09% , linearity is observed as 1-5 mcg/ml and 4-20 mcg /ml ,LOD is 0.1 and 2 mcg/ml ,and LOQ is 0.6 and 3 mcg/ml for Alfuzosin hydrochloride and Dutasteride respectively. No tablet interference observed at peak of interest. Method validation is performed in accordance with ICH and method has a capability of simultaneous quantitation of Alfuzosin hydrochloride and Dutasteride.

Simultaneous RP-HPLC Estimation of Levocetirizine Hydrochloride and Montelukast Sodium in Tablet Dosage Form Analytical Method Development and validation for estimation of Ezetimibe from Tablet Dosage Form Using RP – HPLC

The Research paper provides a simple and short runtime RP-HPLC method for simultaneous estimation of combination drug product (Levocetirizine Hydrochloride and Montelukast Sodium). During Method development multiple trial were taken with different composition of the mobile phases. The Optimized method has following chromatographic parameters

Column: Hypersil, Gold 4.6 mm x 250 mm, 5 µ

Mobile phase: 20:80, 0.05 M Potassium Dihydrogen Phosphate buffer pH7.5: Methanol
Wavelength: 225 nm

Injection Volume: 10 µl

Column Temperature: 35 degree Centigrade

Flow rate: 1.2 ml/min (Isocratic)

Sample preparation is done in mobile phase. Levocetirizine elutes at retention time of 3.2 min while Montelukast elutes at 4.2 min.

The analytical method shows linear response in the range 10 to 260 mcg / ml for Levocetirizine and 10 to 350 mcg/ml for Montelukast. Method is a robust. Recovery is in the range of 98.14 % to 100.0 % for Montelukast and 100.34 to 100.71 for Levocetirizine. The LOD values found is 2.26 mcg /ml and 2.41 mcg /ml for Levocetirizine and Montelukast respectively, where as LOQ values are 6.85 mcg /ml and 7.3mcg/ml for Levocetirizine and Montelukast respectively. The method validation is done as per ICH standard.

**Stability Indicating RP –HPLC Method for Determination of Guanfacine Hydrochloride in Bulk Drugs and in Pharmaceutical Dosage Form**

The developed method is challenged by performing the forced degradation study. Maximum degradation is observed in Oxidative stress condition i.e. 59.2 %, however the analyte peak shows 999.293 peak purity. (Peak purity between 999 to 1000 indicates homogenous peak. The method is capable to show the mass balance close to 100 % which indicates the method is a stability indicating and is validated as per ICH guideline.

The Optimized method has following chromatographic parameters

Column: Apollo, C18, 4.6 mm x 250 mm, 5 µ

Mobile phase: 65:34, 50 mM Ammonium Acetate: Acetonitrile

Wavelength: 220 nm

Injection Volume: 5 µl
Column Temperature: 30 degree Centigrade

Flow rate: 1.0 ml/min (Isocratic)

Sample preparation is in diluent (Water: Acetonitrile, 70:30) and sample are filtered through nylon filter. % Recovery is observed in the range of 99.2 % to 100.5%, Linearity of method is from 30 mcg/ml to 450 mcg/ml with correlation coefficient 0.999. LOD and LOQ value is 0.011mcg/ml and 0.038mcg/ml receptively. Guanfacine shows solution stability at ambient condition for 48 hours with peak purity values of 999.721.