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A Study on Numerous Techniques of Chromatographic Evaluation

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Abstract – Chromatographic Evaluation Techniques utilize partitioning a sample between two phases, one of which is the stationary phase and the other one is the mobile phase. Equipment for liquid chromatography includes a column, where separation takes places, pump, which generates a mobile phase flow, and detector, where the separated compounds are detected. Chromatography is a method which separates molecules based on differences in their structures, namely in size, in presence of charged, polar, and non-polar groups or moieties interacting specifically with an affinity column. After separation in a chromatographic column, particles are eluted to the detector and they are detected as chromatographic peaks.

Keywords: Chromatographic, Evaluation, Techniques, phases, liquid, etc.

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INTRODUCTION

Chromatographic methods are commonly used for the quantitative and qualitative analysis of raw materials, drug substances, drug products and compounds in biological fluids. The components monitored include chiral or achiral drug, process impurities, residual solvents, excipients such as preservatives, degradation products, extractable sand leachable from container and closure or manufacturing process, pesticide in drug product from plant origin, and metabolites.

Spectroscopic techniques, separation techniques, and their multiple combinations are the main tools used to analyze carbohydrates in foods. Glucose, fructose and sucrose are the most abundant carbohydrates present in fruit juices, so in this literature survey we have a focus and measurements on mono- and disaccharides like fructose, glucose, sucrose in same food and pomegranate fruit juice. Most of the reported methods for determination of sugars are chromatographic ones.

REVIEW OF LITERATURE:

Garcia-Alvarez-Coque et al., (2005) discusses, Sulphonamides have also been determined by HPLC following pre-column derivatisation. In one of such procedures, a chromatographic procedure with precolumn derivatisation to form the N-(lnaphthyl) ethylene diamine hydrochloride azo dyes was proposed for the analysis of several sulphonamides (sodium sulphacetamide, sulphadiazine, sulpha guanidine, sulphamerazine, sulphamethizole, sulphamethoxazole, sulphanilamide and sulpha thiazole) in pharmaceutical preparations (tablets, pills, capsules, suspensions and drops). The separation is performed with a 0.05 M sodium dodecyl sulphate/2.4% pentanol eluent at pH 7. The pre-column derivatization improved the resolution in the chromatograms and increased the selectivity in the determination of mixtures of sulphonamides and in preparations where other drugs were present.

Eduard R et al. (2007) discusses the improvement of LC-MS method that achieves both chromatographic separation and good MS sensitivity, iodine attachment was used to improve the sensitivity of glucose measurement by LC/MS. After sample preparation, glucose was separated by normal phase chromatography, followed by ionization by I- attachment prior to MS by post-column addition of methanolic solution of iodoform. Iodine is capable of forming an anionic adducts with neutral monosaccharides in negative ion mode electrospray mass spectrometry. Quasi- molecular ions [M + I] – of glucose was achieved.

Cavrini et al., (2007) reported that HPLC method has also been developed for the determination of aliphatic thiol drugs, such as N-acetyl-Lcysteine, captopril and mercapto propionylglycine in pharmaceutical formulations. The procedure involves a pre-column derivatization of the thiol drug with ethacrynic acid followed by RP-HPLC separation and UV detection. The conditions for a rapid and selective reaction of

the thiols with ethacrynic acid were investigated. The method proved to be suitable for a reliable and selective quality control of commercial dosage forms of the examined thioldrugs.

Mottier *et al.*, (2006), published a method for the detection of4 nitroimidazoles and their three marker metabolites in eggs using detection by LCMS/ MS. Acetonitrile and NaCl were added to egg samples and the mixture wascentrifuged. The resulting extracts were then purified on Oasis HLB SPE cartridges.

According to Young, (2004) Liquid chromatography is one of the more common analytical methods used for the isolation and quantitation of bioactive molecules. Catecholamine determination in brain tissue, extracellular brain dialysate, cerebrospinal fluid, and blood is used to characterize neurochemical changes elicited by behavioural and pharmacological manipulations. High performance liquid chromatography with electrochemical detection (HPLC/ED) is used almost exclusively for this type of analysis.

CONCLUSION:

Chromatography is a method which separates molecules based on differences in their structures, namely in size, in presence of charged, polar, and non-polar groups or moieties interacting specifically with an affinity column. After separation in a chromatographic column, particles are eluted to the detector and they are detected as chromatographic peaks. Spectroscopic techniques, separation techniques, and their multiple combinations are the main tools used to analyze carbohydrates in foods. Glucose, fructose and sucrose are the most abundant carbohydrates present in fruit juices, so in this literature survey we have a focus and measurements on mono- and disaccharides like fructose, glucose, sucrose in same food and pomegranate fruit juice. Most of the reported methods for determination of sugars are chromatographic ones. They include Gas Chromatography (GC), liquid chromatography (LC), high performance liquid chromatography (HPLC) and electrophoresis (EC). High performance liquid chromatography is now the main analytical technique used for the analysis of carbohydrates. Due to their poor volatility, the analysis of carbohydrates has been traditionally carried out by High performance liquid chromatography.

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