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## Omics Era of Analytical Technology: Short Commentary

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### Short Commentary

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#### ABSTRACT

Analytical technique is a basic in the world of chemistry due to which several non-visible components can easily be detected by using such techniques. Detection of several samples like serum, carcinogenic compounds, and metal can be detected with these technologies easily.

#### INTRODUCTION

Science has become so advance that it starts using different analytical techniques in their regular basic experiments. Basically, analytical techniques are those which help in determining the concentration of a chemical component. Researchers have become so much dedicated to use such instruments which help them in their inventive researches. Analytical procedures play an important role in equivalence and risk management. It helps in the establishment of product-specific acceptance criteria and stability of results [1]. It is used in the determination of the concentration of heavy metal present within the body. Metals like calcium, magnesium, fluorine, etc. present in the blood, urine, serum etc. at higher amounts can now also be detected by using different analytical technologies like mass spectroscopy, gas chromatography, HPLC and others. Arsenic which is a naturally occurring element can easily be found in soil, water, seafood, cereals, junk food and usually in poultry animals [2]. These analytical techniques are so much advanced that one can easily find the minor samples of sugars in the cigarettes. Sugar is basically considered as natural tobacco component found in the cigarettes at a 10-20% level. During the manufacturing process some amount of sugar is also mixed in the tobacco during the cigarette and tobacco formation. Thus, the determination of sugar in the tobacco is now considered as the most important subject in the world of analytical science. According to Jansen E et al., it is not a simplest process to determine it on a large-scale but can be determine on a laboratory scale [3].

#### Description of Techniques

Out of several techniques Mass Spectroscopy (MS) have become boon for the nuclear science. MS is an instrument which has been used for a long decade and now its importance has become more in the nuclear industry. MS is used to separate the compounds of different samples from their masses [4]. GC-MS is also highly effective and versatile technique having several scientific applications which helps in the management of quality control, analytical researches, in finding impurities, and maintenance in the human welfare society [5]. The use of GC-MS has been increasing in numerous analytical & bio-analytical techniques. This has become a tradition to use such instruments in both government as well as private laboratories too. Every element related to food industry, pesticides, chemical industry, medications, etc. it is a boon for the researchers [6].

It has been shown that cholic acid has been determined in the rat plasma and urine. The detection was done by Liquid Chromatography (LC) and Tandem Mass Spectroscopy (TMS) [7-11] which gave successfully results during the complete research [12-15]. During a small study it was evaluated that GC-MS was also used in the formulations of different marketed products. Organic substances like methanol, isopropyl alcohol, dichloromethane are generally used in the drug released dosage form for coating purpose in the pharmaceutical industries. These solvents are considered as the excellent solvents for the drug release. GC method was used to evaluate this and found correct as per the ICH guidelines [15,16]. Liquid Chromatography-Mass Spectrometry (LC-MS) method was developed for the quantification of posaconazole in different mouse organs including liver, heart, brain, kidney and lung. Different quantitative methods were used for the determination of Posaconazole in Mouse Tissues. After the research, it has been found that the used method was suitable in the pharmacokinetic and bioavailability studies of Posaconazole in the different mouse tissues [17,18]. Several Physio-chemical parameters also used in the determination of the new drug. According to a research of Martinez-Gómez MA et al., it has been found that a new drug Fosaprepitant helps in the treatment of oncology patients [19]. The technique of LC with TEM is undertaking the excellent role in the clinical laboratory because of its numerous advantages in the field of analytics. During a survey it has been found that its application area has been extended to the monitoring, controlling, toxicological confirmation etc. HPLC & HPTLC also used for the determination of substances like LC do [20-25].

## REFERENCES

1. Chauhan A et al. Analytical Method Development and Validation: A Concise Review. *J Anal Bioanal Tech.* 2015; 6: 1.
2. Akan JC et al. Determination of Heavy Metals in Blood, Urine and Water Samples by Inductively Coupled Plasma Atomic Emission Spectrophotometer and Fluoride Using Ion-Selective Electrode. *J Anal Bioanal Tech.* 2014; 5: 217.
3. Jansen E et al. Simple Determination of Sugars in Cigarettes. *J Anal Bioanal Tech.* 2014; 5: 219.
4. Chandramouleeswaran S and JayshreeRamkumar. Mass Spectrometry: A Boon to Nuclear Industry. *J Anal Bioanal Techniques.* 2014; S6:005.
5. Chauhan A et al. GC-MS Technique and its Analytical Applications in Science and Technology. *J Anal Bioanal Tech.* 2014; 5: 222.
6. Steiner WE and English WA. Emerging Trends in Gas Chromatography and Mass Spectrometry Instrumentation for Analytical & Bioanalytical Techniques. *J Anal Bioanal Tech.* 2015; 6: e118.
7. Nakagawa H et al. Harmonized Collaborative Validation of a Simultaneous and Multiple Determination Method for Nivalenol, Deoxynivalenol, T-2 Toxin, HT-2 Toxin, and Zearalenone in Wheat and Barley by Liquid Chromatography Coupled to Tandem Mass Spectrometry LCMS/ MS;. *J Anal Bioanal Techniques.* 2014; S6: 002
8. Luna LG and Coady K. Identification of X. laevis Vitellogenin Peptide Biomarkers for Quantification by Liquid Chromatography Tandem Mass Spectrometry. *J Anal Bioanal Tech.* 2014; 5:194.
9. Sultana N et al. An Ultra-Sensitive LC Method for Simultaneous Determination of Rosuvastatin, Alprazolam and Diclofenac Sodium in API, Pharmaceutical Formulations and Human Serum by Programming the Detector. *J Anal Bioanal Tech.* 2012; 3:154.
10. VijayaBhaskar V et al. Identification and Reduction of Matrix Effects Caused by Solutol Hs15 in Bioanalysis Using Liquid Chromatography/Tandem Mass Spectrometry. *J Anal Bioanal Tech.* 2013; 4:166.
11. Davis JM. Development of Improved Sandwich Elisa for the In Vitro Detection of Inhibitors of the TNF-TNFR1 Interaction. *J Anal Bioanal Tech.* 2012; 3: 129.
12. Yadav SR and Kumar KE. Liquid Chromatography/Tandem Mass Spectrometry Method for Estimation of Cholic Acid in Rat Plasma, Urine and its Application. *J Anal Bioanal Tech.* 2014; 5: 200.

13. Soomro SA et al. Gas Chromatographic Determination of Amino Acids and Polyamines in Human Skin Samples using Trifluoroacetylacetone and Isobutyl Chloroformate as Derivatizing Reagents. *J Chromatograph SeparatTechniq.* 2014; 5: 248.
14. Belissa E et al. Liquid Chromatography-Tandem Mass Spectrometry for Simultaneous Determination of Ticarcillin and Vancomycin in Presence of Degradation Products.Application to the Chemical Stability Monitoring of Ticarcillin-VancomycinSolutions.*JChromatogr Sep Tech.* 2014; 5: 243.
15. Gnana Raja M et al. A Concise Study of Organic Volatile Impurities in Ten Different Marketed Formulations by [GC/HS-FID/MS] Gas Chromatography Technique. *J Anal Bioanal Tech.* 2014; 5:202.
16. Rodriguez A et al. Development and Validation of a Liquid Chromatography Method with Electrochemical Detection for Hydroxyurea Quantification in Human Plasma and Aqueous Solutions. *J Chromatogr Sep Tech.* 2014; 5: 244.
17. El-Serafi I et al. Quantitative Method for the Determination of Posaconazole in Mouse Tissues using Liquid Chromatography-Mass Spectrometry. *J Anal Bioanal Tech.* 2014; 5: 193.
18. Bunch DR and Wang S Steroid Analysis by Liquid Chromatography- Mass Spectrometry: Derivatization Consideration. *J Chromatograph SeparatTechniq.* 2014; 5: e122.
19. MartÃ-nez-GÃmez MA et al. Physico-Chemical Stability of Mixtures of Fosaprepitant used in Clinical Practice. *J Anal Bioanal Tech.* 2014; 5: 197.
20. Shuijun Li. Standardization of LC-MS/MS in Clinical Laboratory. *J Chromatogr Sep Tech.* 2015; 6: e128.
21. Ezhilarasi K et al. A Simple and Specific Method for Estimation of Lipoic Acid in Human Plasma by High Performance Liquid Chromatography. *J Chromatogr Sep Tech.* 2014; 5: 245.
22. Murthy TGK and Geethanjali J. Development of a Validated RP-HPLC Method for Simultaneous Estimation of Metformin Hydrochloride and Rosuvastatin Calcium in Bulk and In-House Formulation. *J Chromatogr Sep Tech.* 2014; 5: 252.
23. MalferrariM andFrancia F. Isolation of Plastoquinone from Spinach by HPLC. *J Chromatogr Sep Tech.* 2014; 5: 242.
24. Maher HM. Amylose Derivatives as Versatile Chiral Selectors for Enantiomeric Separation in High-Performance Liquid Chromatography and Capillary Electrophoresis. *J Chromatograph SeparatTechniq.* 2014; 5: e123.
25. Rote AR and Kande SK. Development of HPTLC Method for Determination of Amlodipine Besylate and OlmesaratanMedoxomil Using Human Plasma by Liquid Liquid Extraction. *J Anal Bioanal Tech.* 2011; 2:128.