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Role of mass spectrometry in pharmaceuticals

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Mass Spectrometry is an analytical technique to measure the molecular or atomic weight of samples. Mass spectrometer is an instrument that produces charged molecular species in vacuum, separates them by means of electric and magnetic fields and measures the mass-to-charge ratios and relative abundances of the ions thus produced. It is being increasingly used for detection and analysis of proteins from complex samples. Mass Spectrometry has emerged as a powerful analytical tool applied to the health life sciences and the pharmaceutical sector. The use of mass spectrometry in the pharmaceutical sector associated with the drug discovery and development process is rich and varied. Many of the initial efforts were associated with online high performance liquid chromatography mass spectrometry in drug metabolism, pharmacokinetic and pharmacodynamic studies. Pharmacokinetic studies with mass spectrometry can provide quantitative information about a compounds half life in the body and how quickly it is metabolized or excreted. The increase in sensitivity and resolution of the mass spectrometer has opened new dimensions in analysis of pharmaceuticals and complex metabolites of biological systems. Compared with other techniques, mass spectroscopy is only the technique for molecular weight determination, through which we can predict the molecular formula. It is also used as a sensitive detector for chromatographic techniques like LC–MS and GC–MS.

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