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Extended Abstract
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Pharma Europe 2016 : Analysis of 32 toxic natural substances in herbal products by liquid chromatography quadrupole linear ion trap mass spectrometry - Lan Eng LOW - Health Sciences Authority

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In this study, an LC-MS/MS EPI method was developed for simultaneous determination of 32 toxic natural substances in herbal products. The analytes include aconite alkaloids, lobelia alkaloids, solanaceous alkaloids, digitalis steroid glycosides, strychnine, tetrahydropalmatine etc. They were commonly used in herbal products. The target analytes were extracted from the samples using the QuEChERS method and analysed using AB SCIEX QTRAP 5500 coupled with Agilent HPLC 1260. The column used was biphenyl reversed phase analytical column. Mobile phase A and B were deionized water and methanol respectively, both containing 5 mM Ammonium Formate and 0.1% formic acid. The MRM-IDA-EPI method enabled quantification and confirmation of the analytes in a single run. The EPI was used for the qualitative analysis while the MRM was used for the quantitative analysis. Limits of detection were determined to be below 10µg/kg for the majority of the analytes. The recoveries for those commonly detected natural substances were in the acceptable range of 70-120%. Mass spectrometry (MS) is an expository procedure that gauges the mass-to-charge proportion of particles. The outcomes are regularly introduced as a mass range, a plot of power as an element of the mass-to-charge proportion. Mass spectrometry is utilized in a wide range of fields and is applied to unadulterated examples just as unpredictable blends. A mass range is a plot of the particle signal as a component of the mass-to-charge proportion. These spectra are utilized to decide the natural or isotopic mark of an example, the majority of particles and of atoms, and to explain the substance personality or structure of particles and other synthetic mixes. In a regular MS system, an example, which might be strong, fluid, or vaporous, is ionized, for instance by assaulting it with electrons. This may make a portion of the example's atoms break into charged pieces or basically become charged without dividing. These particles are then isolated by their mass-to-charge proportion, for instance by quickening them and exposing them to an electric or attractive field: particles of a similar mass-to-charge proportion will experience a similar measure of deflection.[1] The particles are recognized by a system equipped for identifying charged particles, for example, an electron multiplier. Results are shown as spectra of the sign power of recognized particles as a component of the mass-to-charge proportion. The iotas or atoms in the example can be recognized by relating known masses (for example a whole atom) to the recognized masses or through a trademark discontinuity pattern. Mass spectrometry (MS) is a diagnostic method that quantifies the mass-to-charge proportion of particles. The outcomes are ordinarily introduced as a mass range, a plot of force as an element of the mass-to-charge proportion. Mass spectrometry is utilized in a wide range of fields and is applied to unadulterated examples just as unpredictable blends. A mass range is a plot of the particle signal as an element of the mass-to-charge proportion. These spectra are utilized to decide the essential or isotopic mark of an example, the majority of particles and of atoms, and to clarify the substance character or structure of particles and other concoction mixes. In a run of the mill MS system, an example, which might be strong, fluid, or vaporous, is ionized, for instance by besieging it with electrons. This may make a portion of the example's atoms break into charged parts or just become charged without dividing. These particles are then isolated by their mass-to-charge proportion, for instance by quickening them and exposing them to an electric or attractive field: particles of a similar mass-to-charge proportion will experience a similar measure of deflection. The particles are recognized by a component equipped for identifying charged particles, for example, an electron multiplier. Results are shown as spectra of the sign power of distinguished particles as a component of the mass-to-charge proportion. The iotas or atoms in the example can be recognized by relating known masses (for example a whole particle) to the recognized masses or through a trademark fracture design. A mass spectrometer comprises of three parts: a particle source, a mass analyzer, and an indicator. The ionizer changes over a part of the example into particles. There is a wide assortment of ionization methods, contingent upon the stage (strong, fluid, gas) of the example and the proficiency of different ionization systems for the obscure species. An extraction framework expels particles from the example, which are then focused through the mass analyzer and into the identifier. The distinctions in masses of the parts permits the mass analyzer to sort the particles by their mass-to-charge proportion. The finder quantifies the estimation of a marker amount and along these lines gives information to ascertaining the bounties of every particle present. A few identifiers likewise give spatial data, e.g., a multichannel plate. The accompanying model portrays the activity of a spectrometer mass analyzer, which is of the part type. (Other analyzer types are treated underneath.) Consider an example of sodium chloride (table salt). In the particle source, the example is disintegrated (transformed into gas) and ionized (changed into electrically charged particles) into sodium (Na^+) and chloride (Cl^-) particles. Sodium iotas and particles are monoisotopic, with a mass of around 23 u. Chloride molecules and particles come in two isotopes with masses of around 35 u (at a characteristic bounty of around 75 percent) and roughly 37 u (at a characteristic wealth of around 25 percent). The analyzer part of the spectrometer contains electric and attractive fields, which apply powers on particles going through these fields. The speed of a charged molecule might be expanded or diminished while going through the electric field, and its heading might be changed by the attractive field. The greatness of the redirection of the moving particle's direction relies upon its mass-to-charge

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proportion. Lighter particles get avoided by the attractive power more than heavier particles (in view of Newton's second law of movement, F = mama). The floods of arranged particles go from the analyzer to the identifier, which records the general bounty of every particle type. This data is utilized to decide the concoction component sythesis of the first example (for example that both sodium and chlorine are available in the example) and the isotopic creation of its constituents

Biography

Lan Eng LOW has completed her MSc from National University of Singapore in Applied Chemistry. She is the Senior Analytical Scientist in the Pharmaceutical Laboratory of Health Sciences Authority, the National Regulatory body in Singapore. She has various experiences in biologics manufacturing and pharmaceutical analysis especially in Quality Management and the use of advanced analytical instrumentation for pharmaceutical analysis.

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