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Simultaneous determination of six active components in astragali radix and compound preparations by HPLC-DAD-ELSD

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A quantitative method, namely high-performance liquid chromatography coupled with diode array and evaporative light scattering detectors (HPLC-DAD-ELSD), was developed for simultaneous determination of six active ingredients in astragali radix from 10 different areas and 5 compound preparations of different dosage form. The DAD wavelength at 254 nm was selected for UV detection of three isoflavonoids (1: calycosin-7-O- β -D-glycoside, 2: ononin, 3: calycosin), while the drift tube temperature at 90°C and the nebulizing gas pressure at 1.5 bar were set for ELSD detection of three astragalosides (4: astragaloside IV, 5: astragaloside III and 6: astragaloside I). The conditions of this assay were optimized and the method was fully validated with respected to linear range, precision, repeatability and recovery. The developed method was successfully applied to determination six active ingredients in 15 samples and the results showed distinctive features of the contents of isoflavonoids and astragalosides. This rapid and reliable HPLC-DAD-ELSD method is suitable for quality evaluation of astragali radix and its compound preparations from different source and manufacturing procedure.

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Direct determination of drugs by on-line column switching chromatography

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A nalysis of drugs and metabolites in biological fluids is essential for bioanalysis. An optimal and effective sample preparation method plays the most important role since the depletion of the matrix in biological fluids is the biggest issue for a trouble-free analysis. It is impossible to inject the biofluid directly to the chromatographic system with traditional methods due to possible matrix effect and clogging issues. Liquid-liquid extraction (LLE), protein precipitation and solid-phase extraction (SPE) are the most common and offline/manual sample preparation methods to deplete macromolecules (i.e., proteins) present in the biological fluid prior to liquid chromatographic analysis. To speed-up the clean-up process, fully automated on-line techniques that combine sample preparation with separation could be a remarkable alternative. This could be achieved by the hyphenation of SPE with LC via a switching valve resulting online SPE-LC. This method allows direct repetitive injection of biological sample to a single SPE column. Use of Restricted Access Materials (RAM) as SPE-column packing materials enables the depletion of high molecular weight matrix while the small analyte molecules are retaining; this fractionation is mostly based on 2D chromatography combination of size exclusion chromatography with reversed phase chromatography. Coupling SPE column with LC leads to complete automation improving the analytical quality due to enhanced reproducibility, elimination of human errors and the possibility of multiple step elutions for clean-up of complex samples, reducing the cost and analysis time required.

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