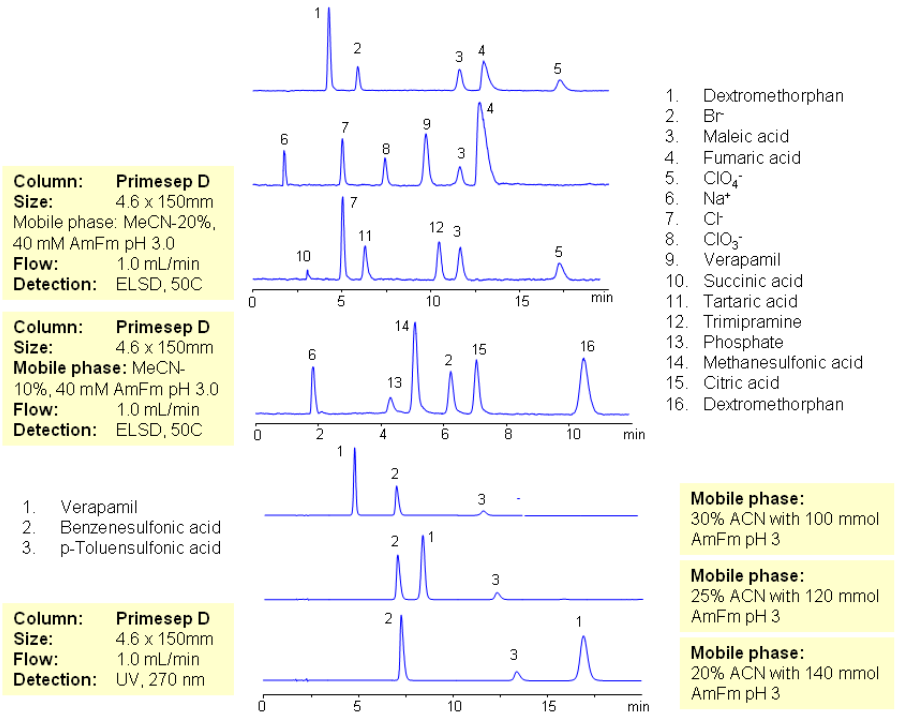
HPLC Analysis of Basic Drugs and Acidic Counter-Ions by Mixed-Mode Chromatography



The majority of drugs in the pharmaceutical industry are administered in salt form. The presence of two counter-ions very often necessitates the use of two methods. The nature of these counterparts in drugs can be an inorganic cation and organic acid, inorganic anion and organic base, and organic cation and organic anion. Furthermore, the properties of the molecules will result in a differing stoichiometry. The task of simultaneous quantitation of counter-ions can be achieved by using mixed-mode columns. The general approach for analysis is based on properties of corresponding counter-ions. Hydrophobic basic drugs, like dextromethorphan, verapamil, trimipramine, and corresponding acidic counter-ions (chloride, chlorate, bromide, bromate, perchlorate, maleate, fumarate,tartrate, succinate, phosphate, citrate, benzosulfonate, toleuensulfonate) can be separated and quantitated in the same run on reversed-phase anion-exchange column. Basic hydrophobic drugs are retained by the reversed-phase mechanism, and counter-ions are retained by the reversed-phase and anion-exchange mechanism. Some polar counter-ions are retained only by the anion-exchange mechanism. Retention time and selectivity of HPLC separation of drugs and counter-ions can be achieved by changing the amount of acetonitrile and the amount of ions in the mobile phase. The detection technique depends on the properties of the counter-ions. In case of low or no UV activity, ELSD can be employed if the counter-ion forms a non-volatile salt with the mobile phase additive (ammonium formate). This HPLC method can be used for simultaneous quantitation of other basic drugs and counter-ions. The presence of two mechanisms of retention allows control over retention times of drug and counter-ion independently, and even allows a change of order of elution when necessary.

AugustaChrom - Dr. Roland Kießwetter
Tel.: +49 821 599 783 70
Fax: +49 821 599 783 71
E-Mail: info@hplc-shop.de

Method Parameters

Column	Primesep D , 4.6×150 mm, 5 µm, 100 Å
Mobile Phase	MeCN/H2O
Buffer	AmFm pH 3.0
Flow Rate	1.0 mL/min
Detection	ELSD, UV 270

Quelle: https://sielc.com/Application-HPLC-Analysis-of-Basic-Drugs-and-Acidic-Counter-Ions-By-Mixed-Mode-Chromatography