Scharlau

The wise choice

LC-MS & UHPLC-MS solvents

The right purity for an excellent result

LC-MS and UHPLC-MS combine the advantages of chromatographic separation with those of Mass Spectrometry. UHPLC has the added advantage of being faster (fivefold or higher raw throughput) and having a lower solvent consumption (at least 90%) compared to conventional HPLC. When it comes to the detection, the structural information of the separated compounds given by Mass Spectrometry allows their identification and quantification, even if they are in complex matrixes. These features make both techniques widely used for pharmaceutical QC, synthesis of organic compounds and environmental analysis, as well as for genomics and proteomics.

The transition from liquid chromatography with UV detection to chromatography with MS detection is not trivial. It is necessary to adapt the methods to the new analytical conditions in order to obtain the maximum benefits associated to LC-MS/UHPLC-MS.

The efficiency of a LC-MS or an UHPLC-MS instrument is increased with the use of cleaner eluents. In this context, an HPLC grade solvent is not the most suitable option for its use in LC-MS/UHPLC- MS, as some impurities that are not detected by UV spectroscopy could interfere in the Mass Spectrometry. In addition, the use of LC-MS or UHPLC-MS quality solvents avoids equipment obstructions and reduces maintenance.

To reduce the amount of undesired impurities even more, all our LC-MS or UHPLC-MS bottles undergo a special treatment to avoid metal migration from the glass to the solvent.

Our solvents and mixtures for LC-MS and our solvents for UHPLC-MS respond to these requirements, ensuring:

- **LOW CONTENT OF METALLIC IMPURITIES**
- **MICROFILTERED THROUGH 0,1 µM**
- **MINIMUM LEVEL OF ACIDITY AND ALKALINITY**
- **LOW WATER CONTENT**
- **LOW LEVEL OF NON-VOLATILE IMPURITIES**
- **IMPURITIES CONTROLLED BY LC-MS OR UHPLC-MS (RESERPINE TEST DONE ON EACH BATCH)**
- **CERTIFICATE OF ACTUAL BATCH ANALYSIS**

What will you gain by using our LC-MS solvents and mixtures or our UHPLC-MS solvents?

- Simpler and cleaner spectra
- Prevent the formation of unwished adducts with metallic impurities
- Longer column lifetimes
- Avoid equipment obstructions
- Savings in equipment maintenance

Metallic impurities at the ppm level that do not affect a conventional HPLC quantification, can distort its mass spectrum, modifying the abundance of the molecular ions of interest and complicating its interpretation. Below two spectra of the same peptide are shown, where the effect of using acetonitrile and water of LC-MS quality is clearly observed. The analysed peptide is human gastrin and the major ion, $[M+2H]^{2+}$, should appear at m/z = 1050.

In Fig. 1, the desired peak is masked by other peaks corresponding to adducts from the peptide with other alkaline metals ($[M+Na+H]^{2+}$, m/z = 1063 or $[M+K+H]^{2+}$, m/z = 1070), when using an HPLC grade solvent. As contrast, Fig. 2 shows a clear and neat peak corresponding to the desired $[M+2H]^{2+}$ ion, when a Scharlau's acetonitrile and water LC-MS solvent was employed.

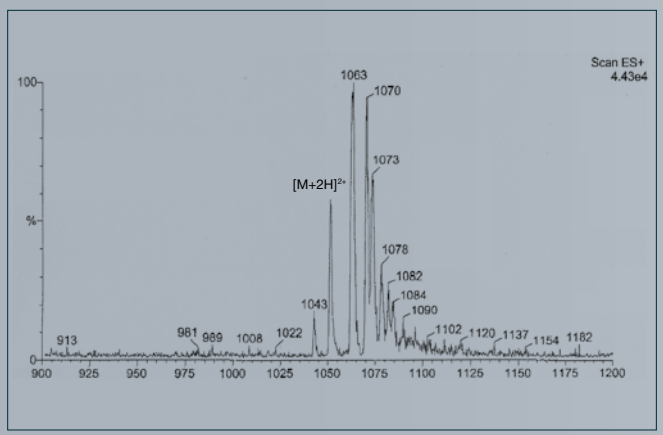

Figure 1.
HG spectrum obtained with HPLC grade acetonitrile and water.

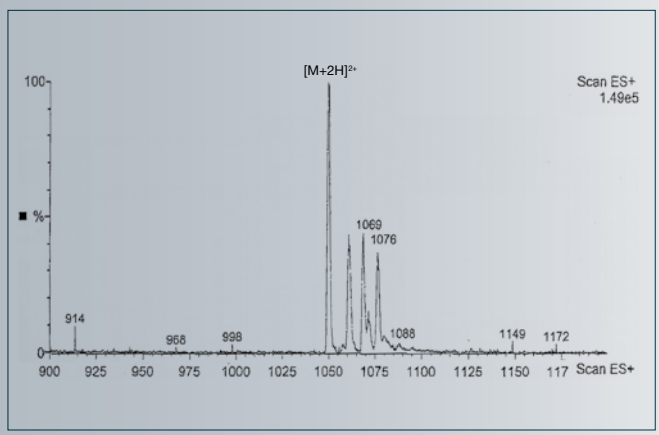

Figure 2.
HG spectrum obtained with Scharlau's LC-MS acetonitrile and water.

LC-MS analytical conditions

- **Eluent:** ACN/H_2O mixture, 50/50, v/v, with 0,2% formic acid
- **Flux:** 250 µl/min. Split.
- **Injection volume:** 50 µl of a 10 µg/ml human gastrin solution
- **Detection:** ESI + Frag. 3500 V Source T: 150 °C

Ordering information

UHPLC-MS solvents

Description	Reference
Acetonitrile, UHPLC-MS	AC0391
Methanol, UHPLC-MS	ME0334
Water, UHPLC-MS	AG0015

LC-MS solvents

Description	Reference
Acetonitrile, LC-MS	AC0371
Ethyl acetate, LC-MS	AC0158
Methanol, LC-MS	ME0326
2-Propanol, LC-MS	AL0326
Water, LC-MS	AG0006

LC-MS blends

Scharlau offers ready-to-use solvent/modifier mixtures, greatly simplifying eluent preparation and assuring its suitability for LC-MS analysis.

Description	Reference
Acetonitrile with 0,1% acetic acid, LC-MS	AC0374
Acetonitrile with 0,1% formic acid, LC-MS	AC0373
Acetonitrile with 0,1% trifluoroacetic acid, LC-MS	AC0372
Methanol with 0,1% acetic acid, LC-MS	ME0329
Methanol with 0,1% ammonium acetate, LC-MS	ME0330
Methanol with 0,1% trifluoroacetic acid, LC-MS	ME0327
Water with 0,1% acetic acid, LC-MS	AG0009
Water with 0,1% ammonium acetate, LC-MS	AG0010
Water with 0,1% trifluoroacetic acid, LC-MS	AG0007
Water with 0,1% formic acid, LC-MS	AG0008

LC-MS additives

In the preparation of eluents for LC-MS it is common to add modifiers in order to promote the formation of molecular ions, thus improving spectral peak shapes.

Description	Reference
Acetic acid glacial, eluent additive for LC-MS	AC0347
Ammonia, solution 25%, eluent additive for LC-MS	AM0258
Ammonium acetate, eluent additive for LC-MS	AM0259
Ammonium formate, eluent additive for LC-MS	AM0320
Formic acid, eluent additive for LC-MS	AC1076
Trifluoroacetic acid, eluent additive for LC-MS	AC3144
Triethylamine, eluent additive for LC-MS	TR0217

Auxiliary products

Once the daily work with the LC-MS equipment has been concluded, it is convenient to eliminate the remaining salts inside of the equipments by rinsing it with water for a period of time. After the salts elimination, it is recommended to keep a 2-propanol/water mixture in the equipment to inhibit the growth of microorganisms.

Description	Reference
Formic acid solution, 10% in water, for cleaning, LC-MS	AC1075
Ammonium acetate solution, 10 mmol/l in water, for cleaning, LC-MS	AM0262
2-Propanol/water, 50:50 (v/v), for cleaning, LC-MS	ME0797

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