AAT Column

Amino Acid Trap Column

- **Efficient trapping of amino acids & small peptides**
- **Easy installation as a precolumn**
- **4 x 50 mm column, 5 µm resin**

In compositional analysis of monosaccharides from glycoproteins using HPAEC-PAD, the presence of amino acids and small peptides can interfere with the quantification of the carbohydrates of interest. These amino acids and small peptides are generated during the acid hydrolysis of glycoproteins upon release of the monosaccharides from the protein backbone. If the concentration of amino acids such as lysine and glutamine are high compared to that of the released monosaccharides, they will interfere with the monosaccharide quantification due to coelution. Moreover, amino acids are less efficiently removed from the Au electrode surface due to the suboptimal potential waveform applied for monosaccharide detection, which might lead to electrode fouling and loss of signal. To eliminate the interference of amino acids and to assure optimal performance of the monosaccharide analysis, Antec Scientific has introduced an Amino Acid Trap (AAT) column.

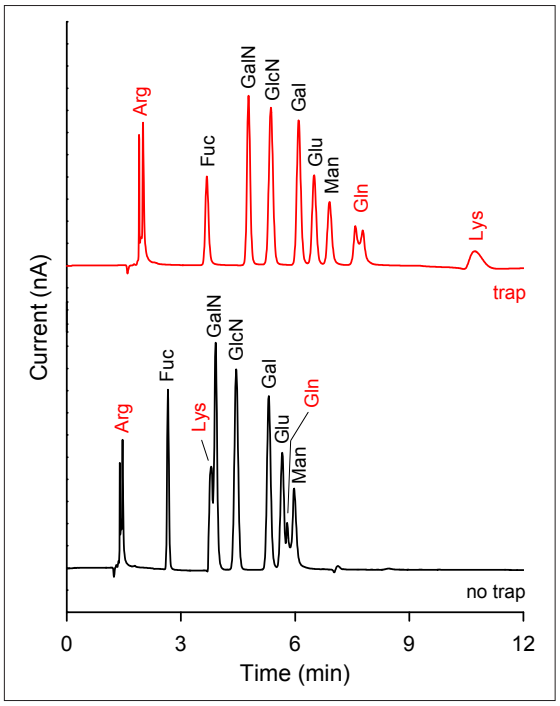

Figure 1: Analysis of carbohydrates with and without trap column. Interfering peaks of Glutamine (Gln) and Lysine (Lys) are efficiently trapped (upper trace) and elute later during the wash step. In both cases the amino acid Arginine (Arg) elutes in the void volume (t_0) of the column.

Conditions: A mix of 6 monosaccharides and 4 amino acid standards was injected onto a SweetSep™ AEX20 column, 4.0 x 200 mm, using a 20 mM NaOH eluent (30°C, 0.7 mL/min) with and without trap column.
The AAT column is used as a pre-column connected in-line with the SweetSep column. Injected sample: 10 µL of standards in DI water of 10 µM monosaccharides (fucose, galactosamine, glucosamine, galactose, glucose and mannose) and 1 mM amino acids (arginine, lysine and glutamine).

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Principle

The AAT column is based on a novel monodisperse 5 µm polymeric resin functionalized with active groups which temporarily trap or delay the elution of amino acids and small peptides under the separation conditions (10 - 20 mM NaOH) used in HPAEC-PAD monosaccharide analysis. Subsequently, the trapped amino acids are eluted during the wash/regeneration step at high pH (typically 100 – 200 mM NaOH), without contaminating the Au working electrode surface.

Specifications

Parameter		**Amino acid trap**
Type		Polymer grafted film on porous polymeric resin
Particle	Material	ethylvinylbenzene-divinylbenzene copolymer
	Diameter (µm)	5
	Pore size (Å)	Macro-porous, 300
	Crosslinking (%)	55%
	Functionality	hydroxyethyl quaternary ammonium
Organic solvent limit		0-80% ACN or MeOH for cleaning
T operating range (°C)		10-40
pH range		0-14
max (psi/bar)		4000/280

Part no	Description
260.0040	Amino acid trap, 4.0 mm ID x 50 mm. Traps amino acids present in the sample that interfere with the monosaccharide separation.

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