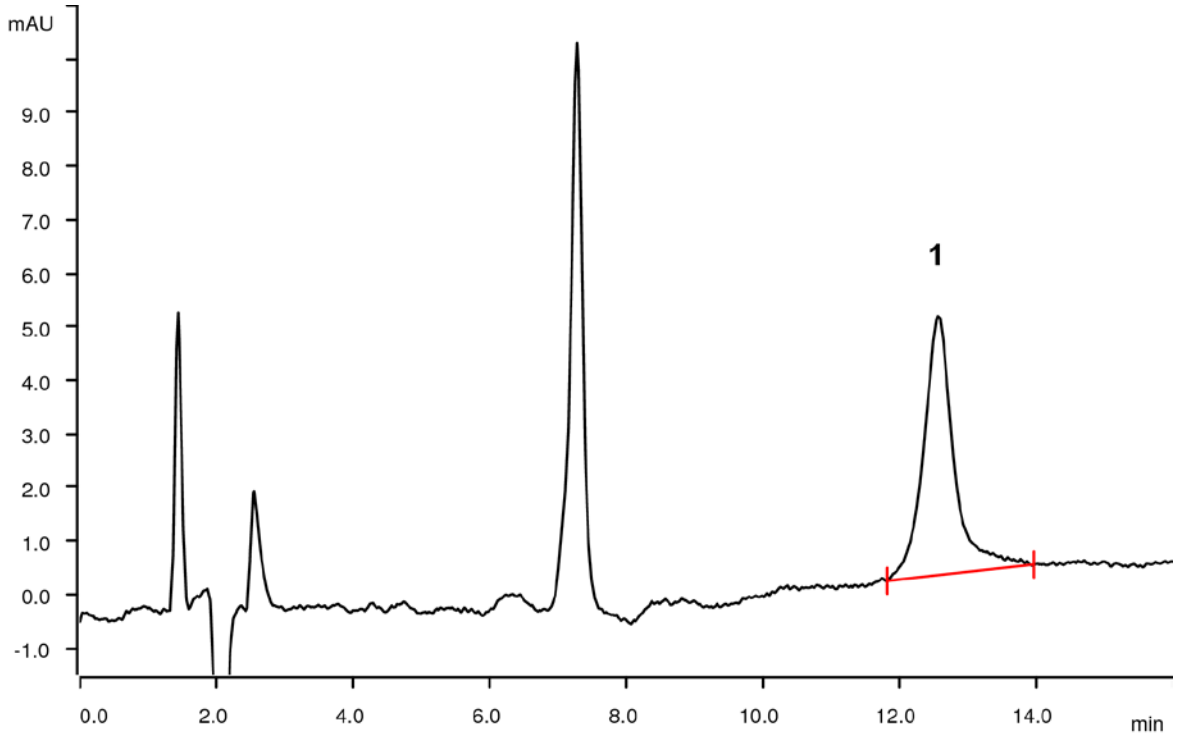
IC Application Note U–75

Determination of aluminum (Al^{3+}) in a vaccine by ion chromatography with UV/VIS detection



Aluminum (as gel or salt) is used in vaccines as an adjuvant. This helps to get a stronger immune response. The amount of aluminum in vaccines is regulated e.g. by USP. According to USP maximum amounts of Al^{3+} in a vaccine dose lay between 0.85 and 1.25 mg. This work describes the determination of aluminum as the 8-hydroxyquinoline complex by ion chromatography with UV/VIS detection.

Results

	Cation	Concentration [mg/kg]	Recovery [%]
1	Aluminum	1.54	102

Metrohm

Sample

Vaccine

Sample preparation

0.5 g of sample made up to 10 mL with eluent. Filtration (0.2 µm) prior to injection.

Columns

Prontosil 120-5-C18 AQ - 150/4.0	6.1008.100
Prontosil 120-5-C18 AQ Guard/4.0	6.1008.110

Solutions

Eluent	5 mmol/L 8-hydroxy quinoline in 20 mmol/L acetate buffer pH = 5.9 : acetonitrile = 3:2

Analysis

UV/VIS detection

Parameters

Flow rate	1.0 mL/min
Injection volume	100 µL
P_{max}	120 MPa
Recording time	16 min
Column temperature	ambient
Wavelength	390 nm

Instrumentation

930 Compact IC Flex	2.930.1100
944 Professional UV/VIS Detector Vario	2.944.0010
858 Professional Sample Processor	2.858.0020