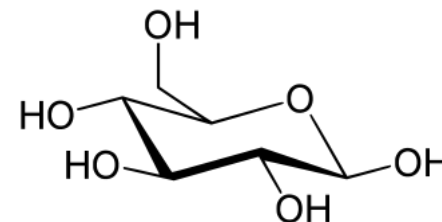
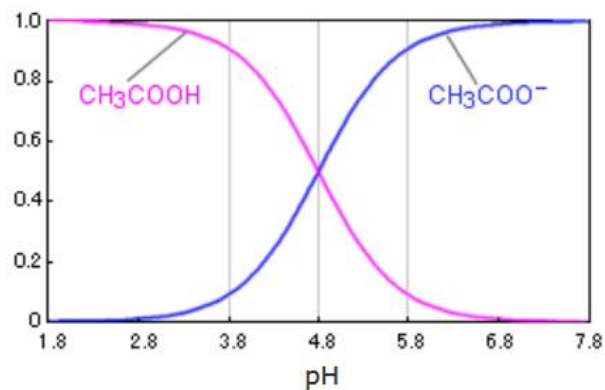
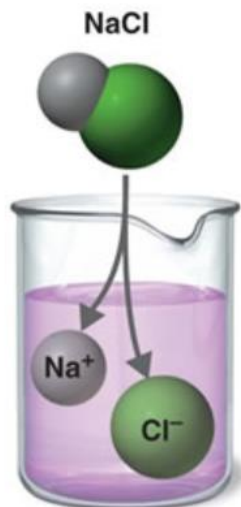


Accelerating **Innovation** & Enhancing Productivity

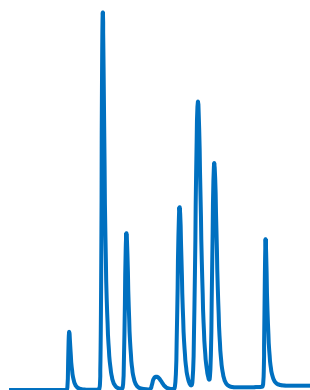
Iontová chromatografie v obvyklých i neobvyklých aplikacích

Magdalena Voldřichová
Veronika Plisková

Iontová chromatografie

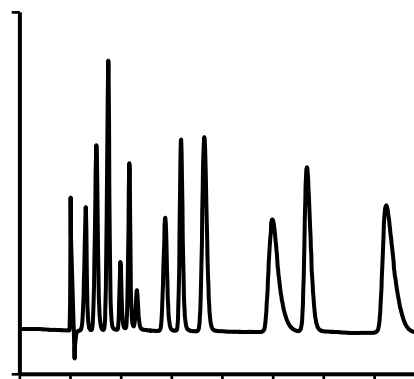


1 - ANORGANICKÉ IONTY



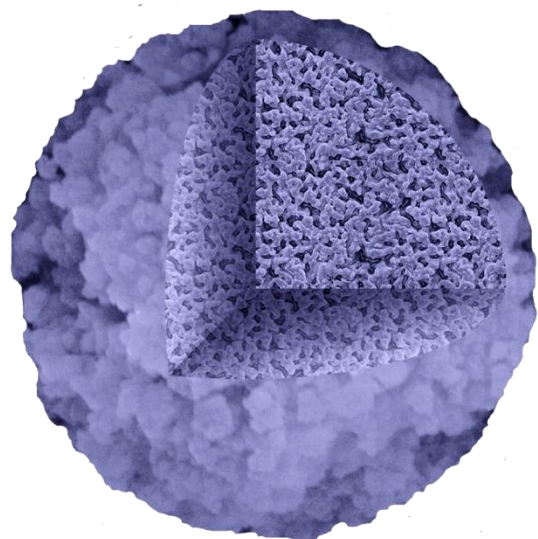
1. Fluoride
2. Chloride
3. Nitrite
4. Carbonate
5. Bromide
6. Sulfate
7. Nitrate
8. Phosphate

2 – ORGANICKÉ IONTOVÉ A POLÁRNÍ LÁTKY



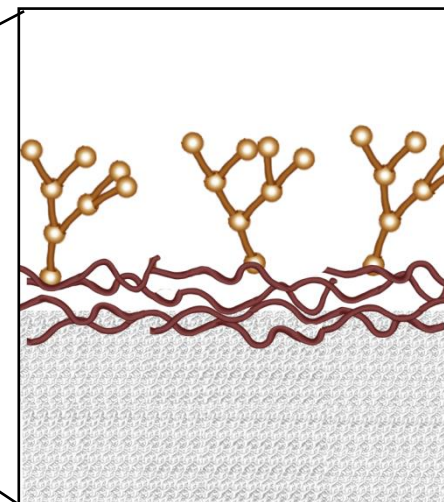
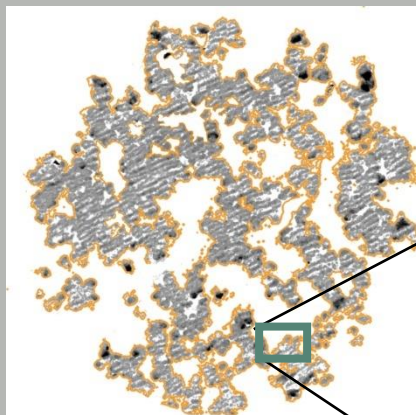
Peaks:		
1.	Oxalic	5.0 mg/L
2.	Tartaric	10.0
3.	Citric	15.0
4.	Malic	20.0
5.	Glycolic	10.0
6.	Formic	10.0
7.	Lactic	10.0
8.	2-Hydroxyisobutyric acid	30.0
9.	Acetic	25.0
10.	Succinic	25.0
11.	Fumaric	35.0
12.	Propionic	50.0
13.	Glutaric	40.0

Kolony pro iontovou chromatografií



55% cross-polymerní EVB-DVB 4 μm

Povrchová modifikace



Iontové chromatografy

RFIC

HPIC



Dionex Aquion



Dionex Integrion



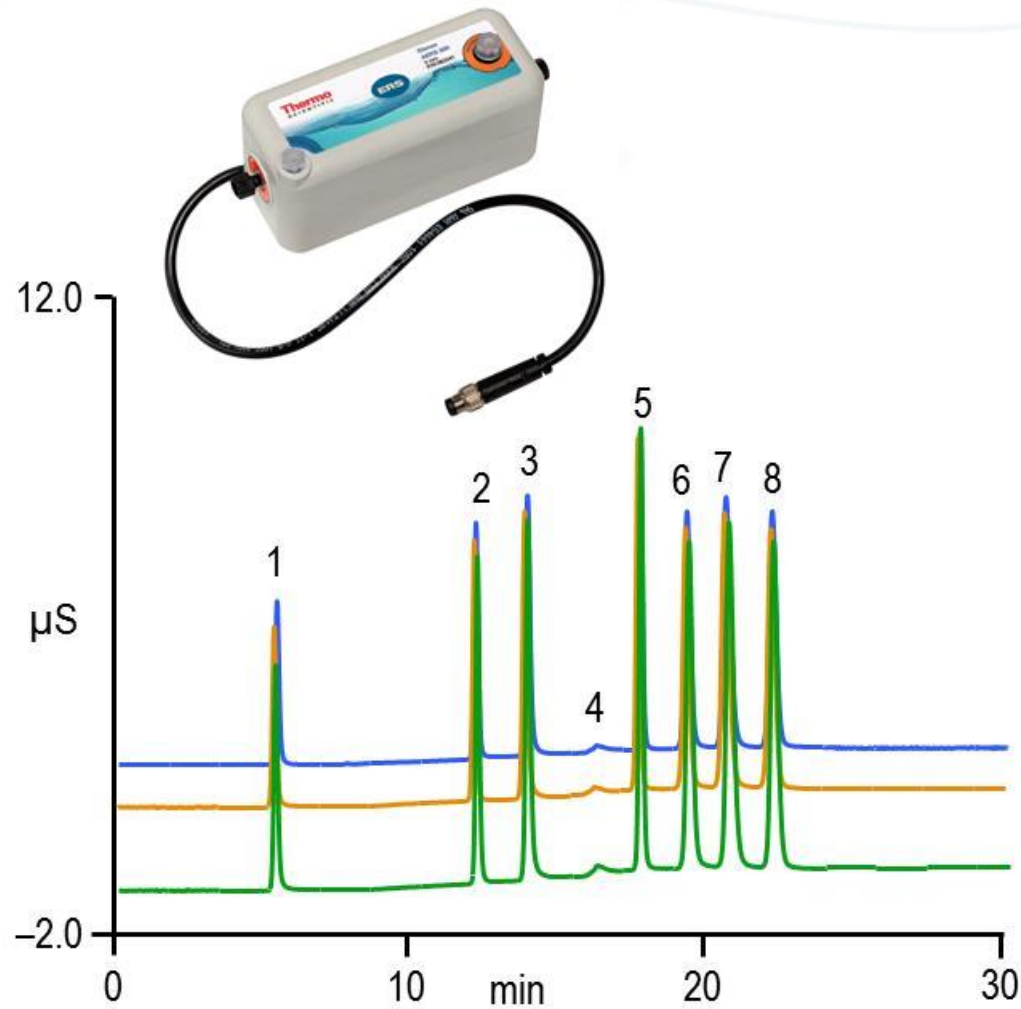
Dionex ICS-4000



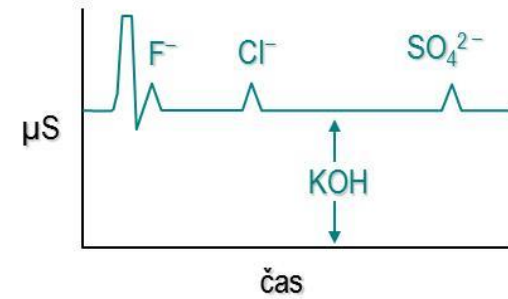
Dionex ICS-5000⁺



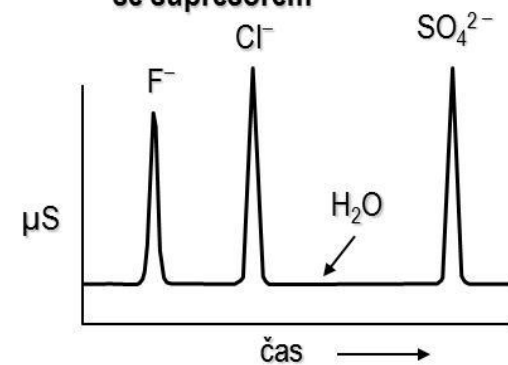
Vodivostní detekce



bez suprese

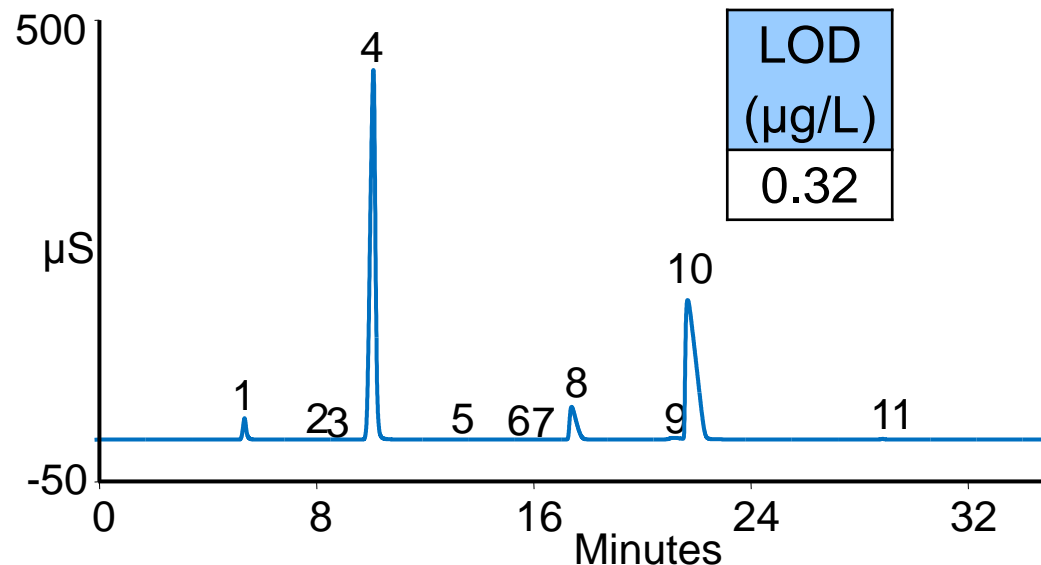
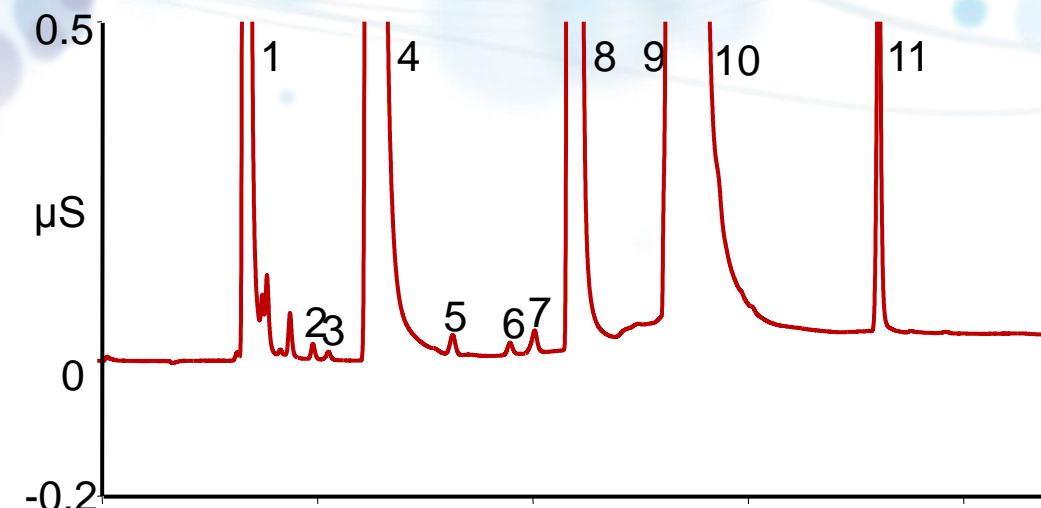


se supresorem



18443

Stopové koncentrace bromičnanů IonPac AS19-4 μ m

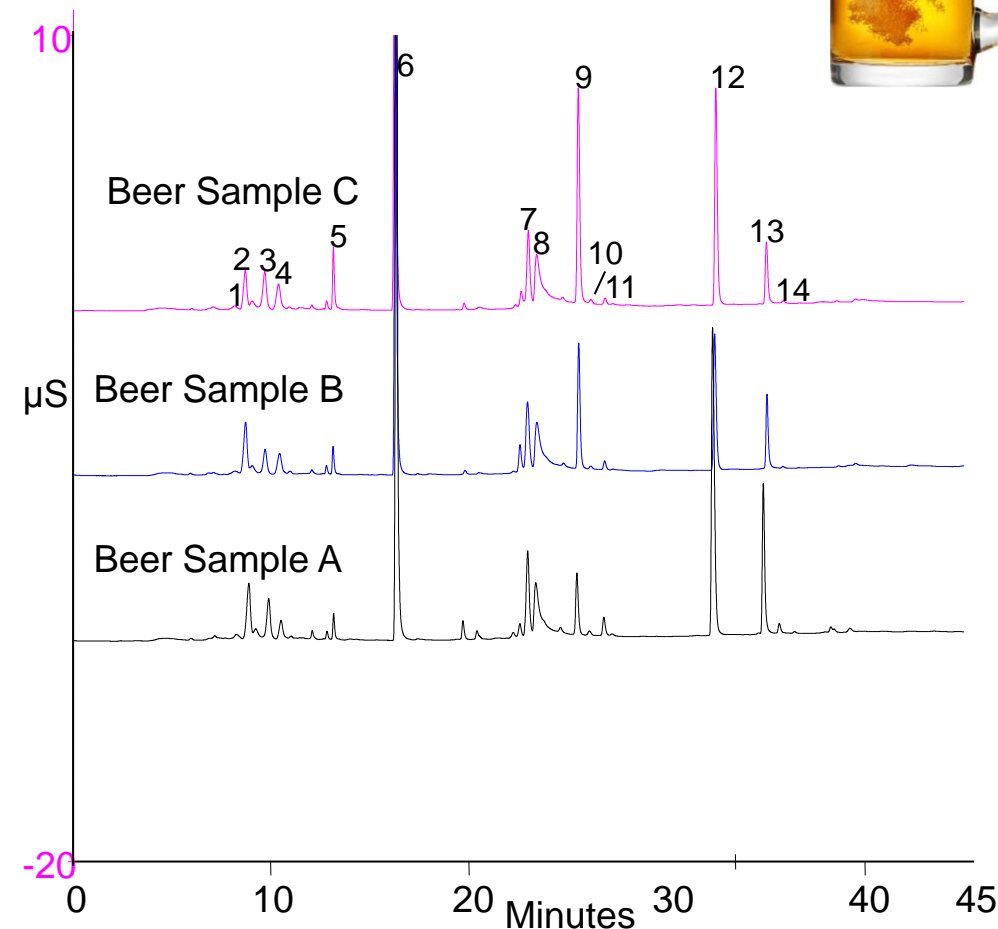


System: Thermo Scientific™ Dionex™ ICS-5000+ HPIC system
 Column: Thermo Scientific™ Dionex™ IonPac™ AS19-4 μ m + guard (4 \times 250 mm)
 Eluent: 10 mM KOH from 0 to 10 min, 10–45 mM KOH from 10 to 25 min
 Eluent Source: Thermo Scientific™ Dionex™ EGC 500 KOH Cartridge
 Flow Rate: 1.0 mL/min
 Inj. Volume: 200 μ L
 Temperature: 30 °C
 Detection: Suppressed Conductivity, Thermo Scientific™ Dionex™ AERS™ 500 suppressor, 4 mm AutoSuppression, recycle mode
 Sample: Simulated Drinking Water

Peaks:	Concentration	Unit
1. Fluoride	1.0	mg/L
2. Chlorite	0.005	
3. Bromate	0.005	
4. Chloride	50.0	
5. Nitrite	0.005	
6. Chlorate	0.005	
7. Bromide	0.005	
8. Nitrate	10.0	
9. Carbonate	25.0	
10. Sulfate	50.0	
11. Phosphate	0.20	

6 Recommended hydroxide column for EPA Method 300.0 (B)

Analýza piva



Column: Dionex IonPac AS11-HC-4µm set,
(4 × 250 mm)

Eluent : 1 mM KOH (8 min),
1–15 mM KOH (10 min),
15–30 mM KOH (10 min),
30–60 mM KOH (10 min)

Eluent Source: Dionex EGC 500 KOH

Flow Rate: 1.5 mL/min

Inj. Volume: 10 µL

Temperature: 30 °C

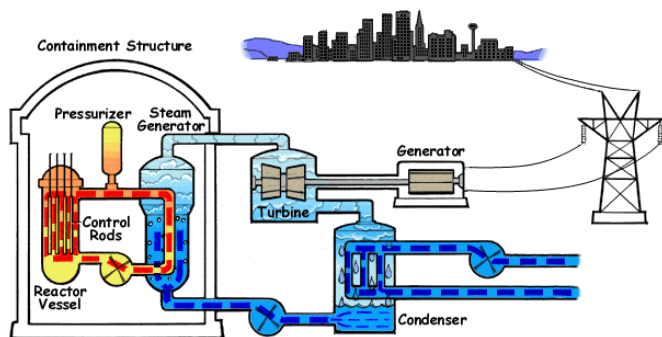
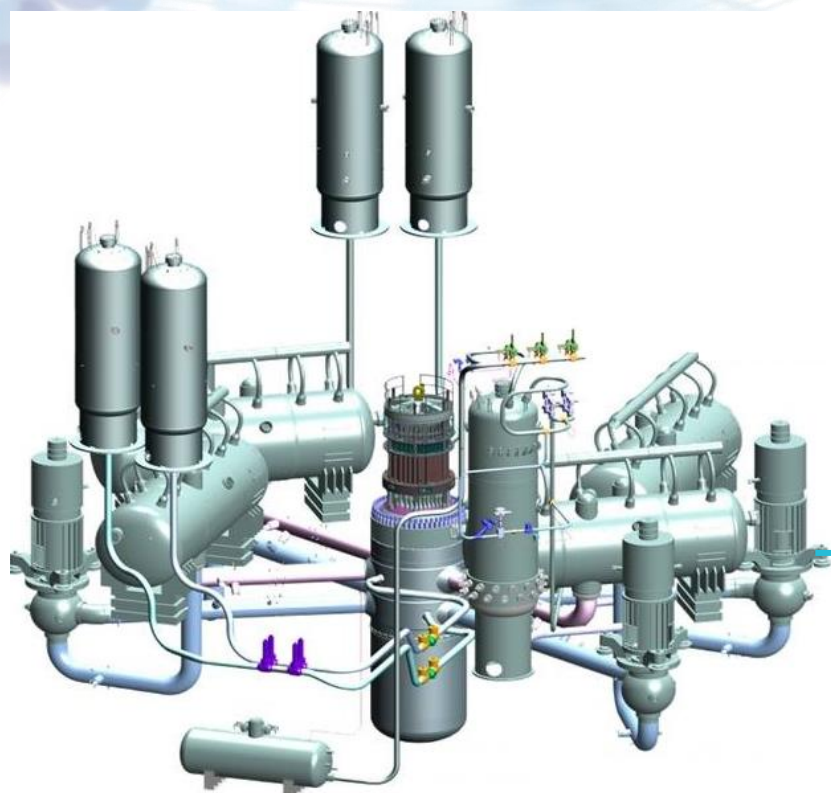
Detection: Suppressed conductivity,
Dionex ASRS 300, 4 mm,
recycle mode

Sample Prep: 5-fold dilution

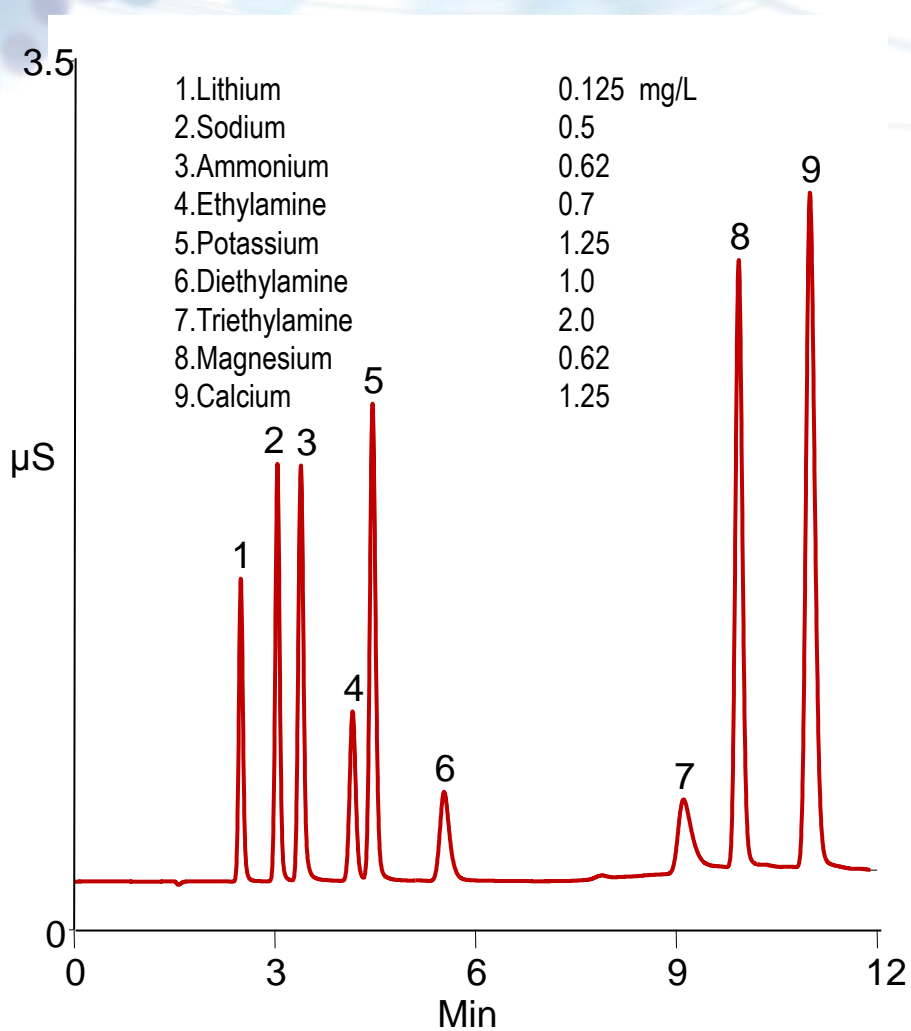
Peaks :

- | | |
|-----------------------|----------------|
| 1. Quinate | 8. Carbonate |
| 2. Fluoride | 9. Sulfate |
| 3. Lactate | 10. Oxalate |
| 4. Acetate | 11. Fumarate |
| 5. Pyruvate | 12. Phosphate |
| 6. Chloride | 13. Citrate |
| 7. Succinate + Malate | 14. Isocitrate |

Vodivostní detekce – jaderné elektrárny

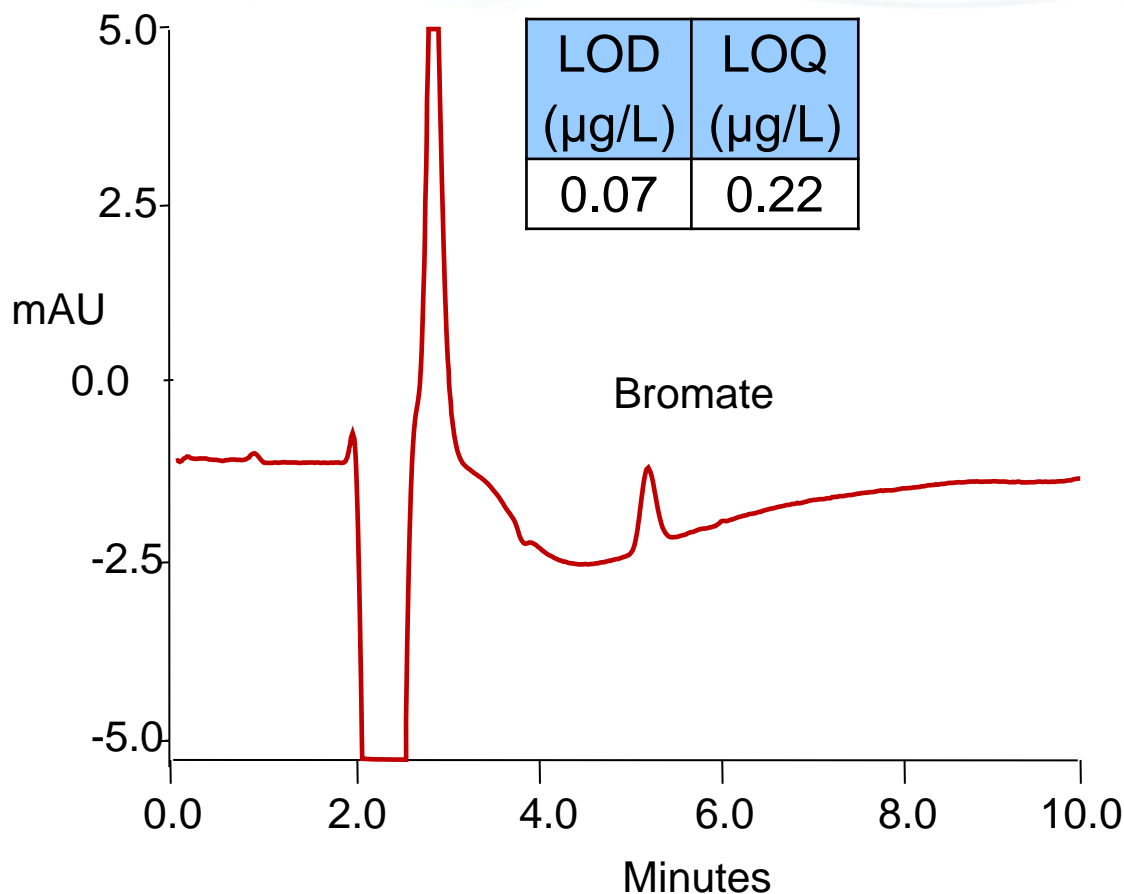


Vodivostní detekce – jaderné elektrárny



UV detekce

Bromičnany s kyselým eluentem- ISO 11206



Column: Thermo Scientific™
Dionex™ CarboPac™
PA1
(4 × 250 mm)
Eluent: 200 mmol/L MSA
Flow: 1 mL/min
Injection vol.: 500 μL
Detection: UV 352 nm (after PCR)
Temperature: 30 °C

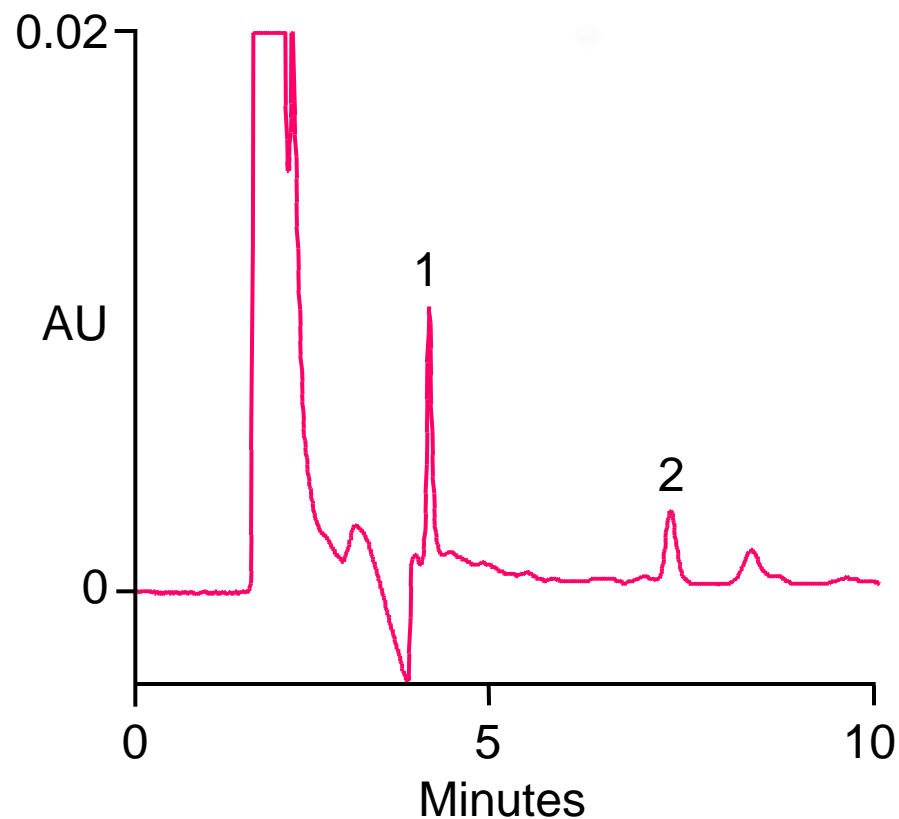
PCR:
Solution A: 0.27 mol/L KI, 0.05 mmol/L
(NH_4)₆Mo₇O₂₄ · 4H₂O
Flow: 0.3 mL/min
Reaction coil: 375 μL

Bromate 1.2 $\mu\text{g/L}$

Reaction at Ambient Temp., and no Interferences from Chlorite
Cycle Time: 18 minutes

UV detekce

Dusitany a dusičnany v šunce



Column: IonPac® AS11

Eluent: 5 mM sodium hydroxide

Flow Rate: 1 mL/min

Inj. Volume: 25 µL

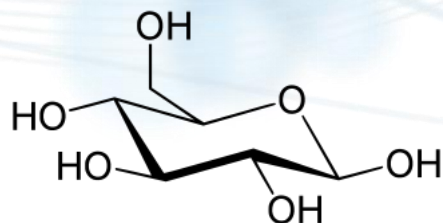
Detection: UV, 225 nm

Sample

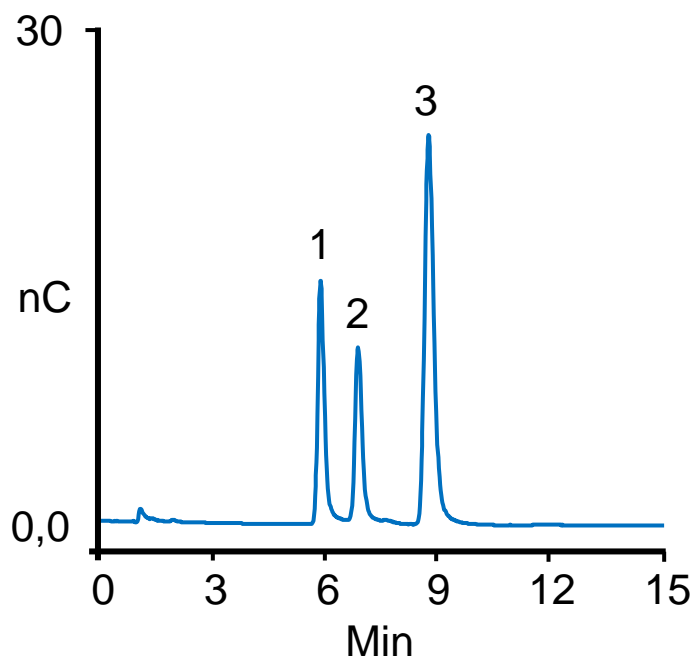
Preparation: Homogenize 10 g of sample with 100 mL of water. Heat to 75 °C for 15 min. Centrifuge. Filter through 1.2 µm filter, then 0.2 µm filter.

Peaks:	1. Nitrite	1.16
	mg/L	
	2. Nitrate	0.54

Amperometrická detekce



Rumový likér

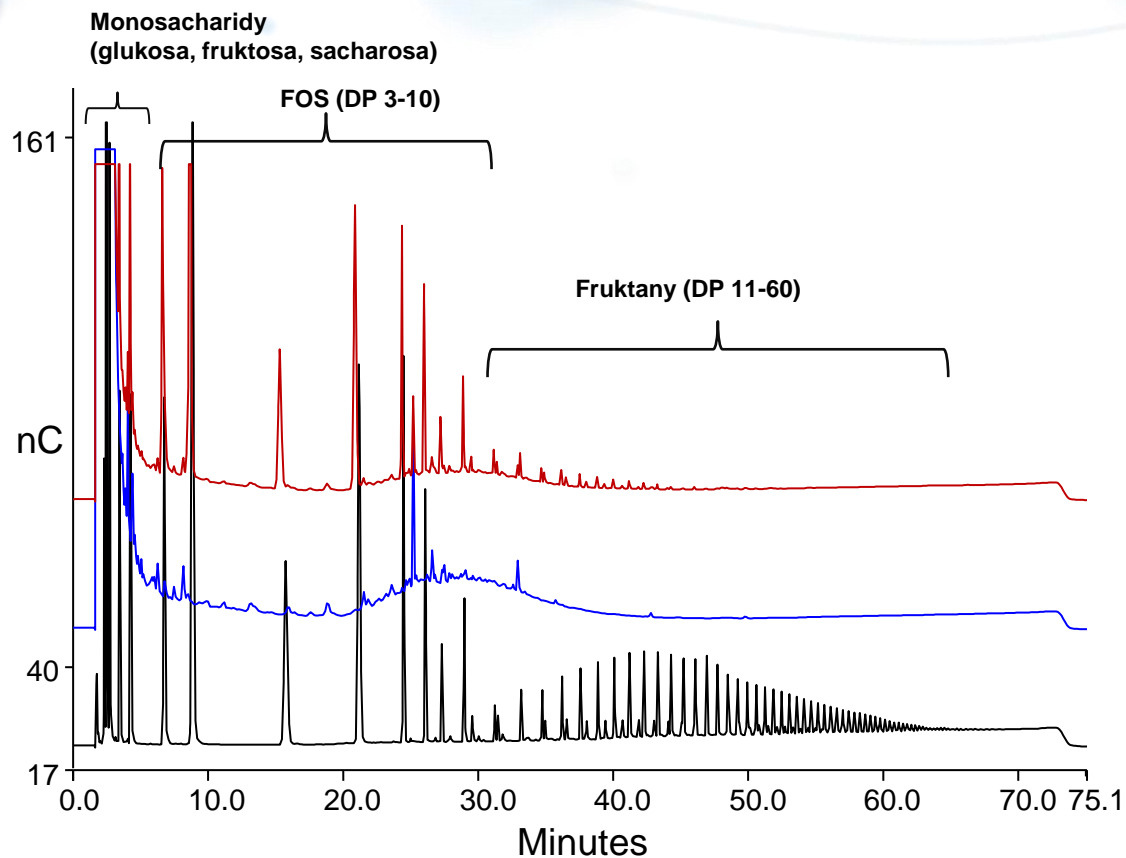


Podmínky

Kolona: Dionex CarboPac PA20 guard,
Dionex CarboPac PA20, 3 mm i.d.
Eluent: 35 mM KOH
Eluent gener.: Dionex EGC 500
Průtok: 0,50 mL/min
Nástřik: 0,4 μ L
Teplota kol.: 30 $^{\circ}$ C
Detekce: PAD, Au/PTFE
Ref. elektroda: Ag/AgCl
Vzorek: 100x naředěn deionizovanou vodou

1. Glukóza	0.30 g/L
2. Fruktóza	0.28
3. Sacharóza	1.08

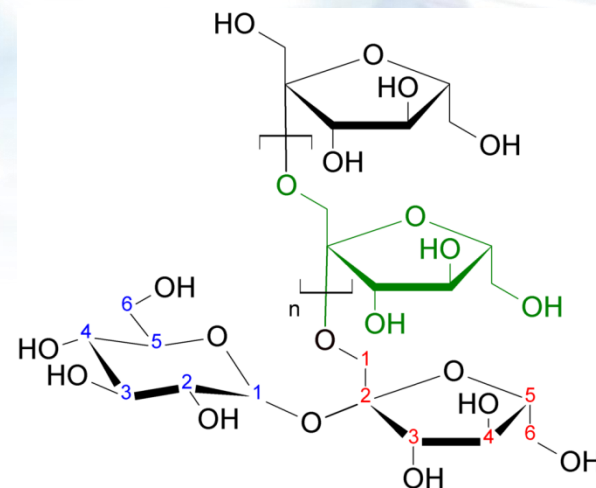
Amperometrická detekce



A. Inulin-FOS fruktoligosach. vláknina

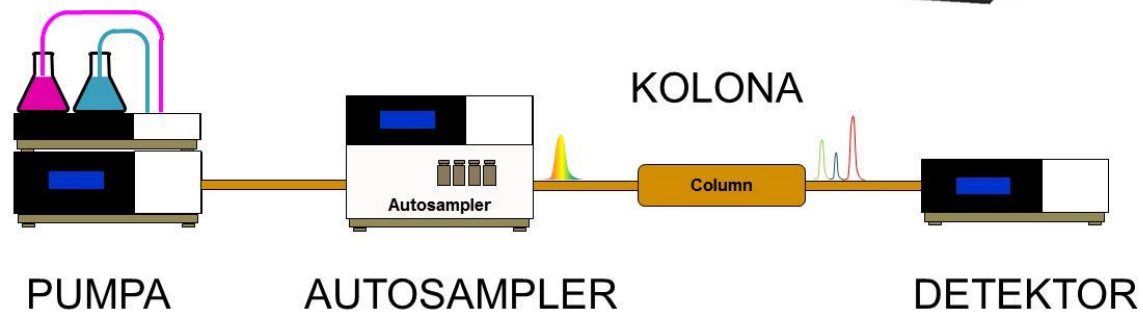
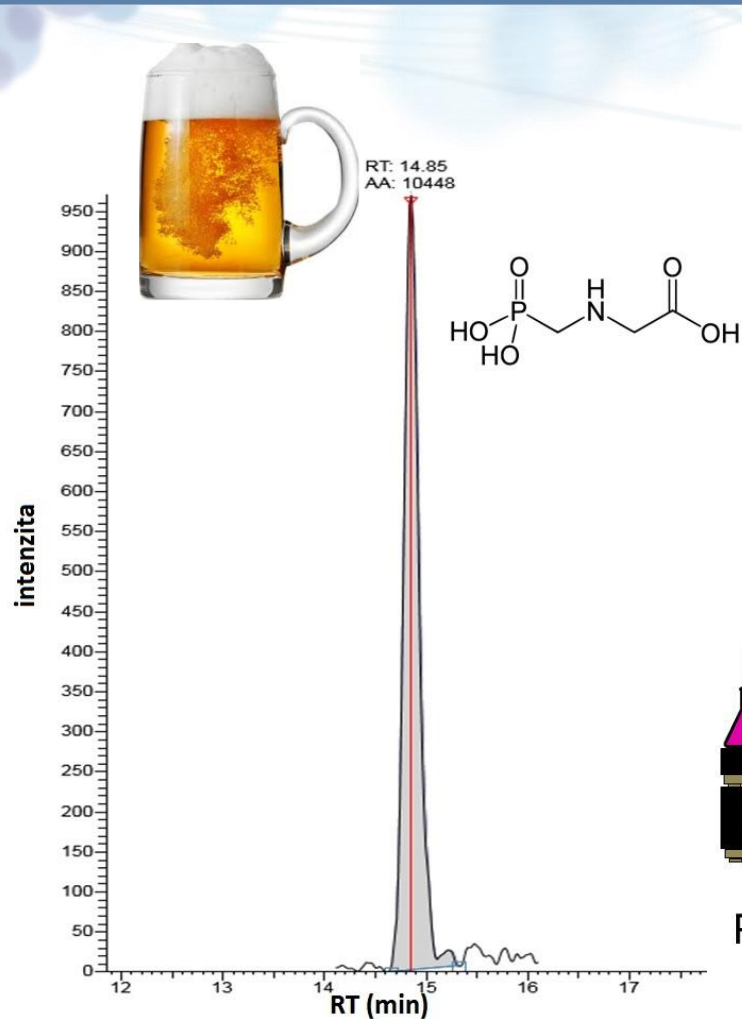
B. Probiotický nápoj

C. Směs v poměru 1:1

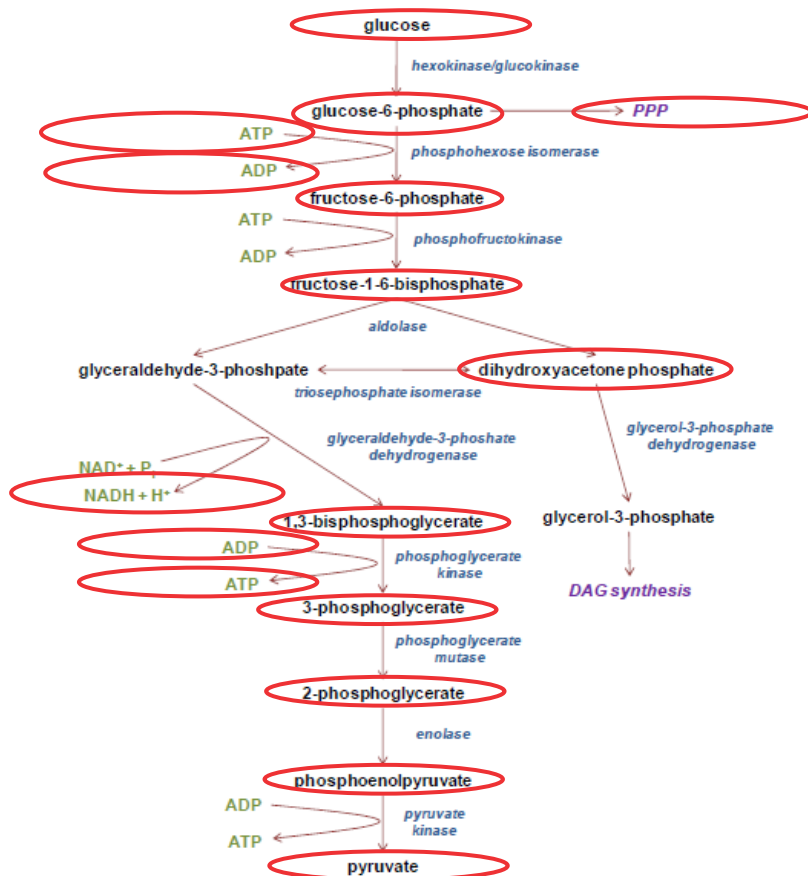


Kolona:	CarboPac PA200 + guard
Eluent:	-5 min: 100 mM NaOH/20 mM NaAc, 0 -15 min: 100 mM NaOH/20 mM NaAc, 15-70 min: 100 mM NaOH/450 mM NaAc, 70-70.1 min: 100 mM NaOH/20 mM NaAc, 70.1-75 min: 100 mM NaOH/20 mM NaAc
Teplota:	30 °C
Průtok:	0.5 mL/min
Nástřik:	10 µL
Detekce:	PAD (Au)

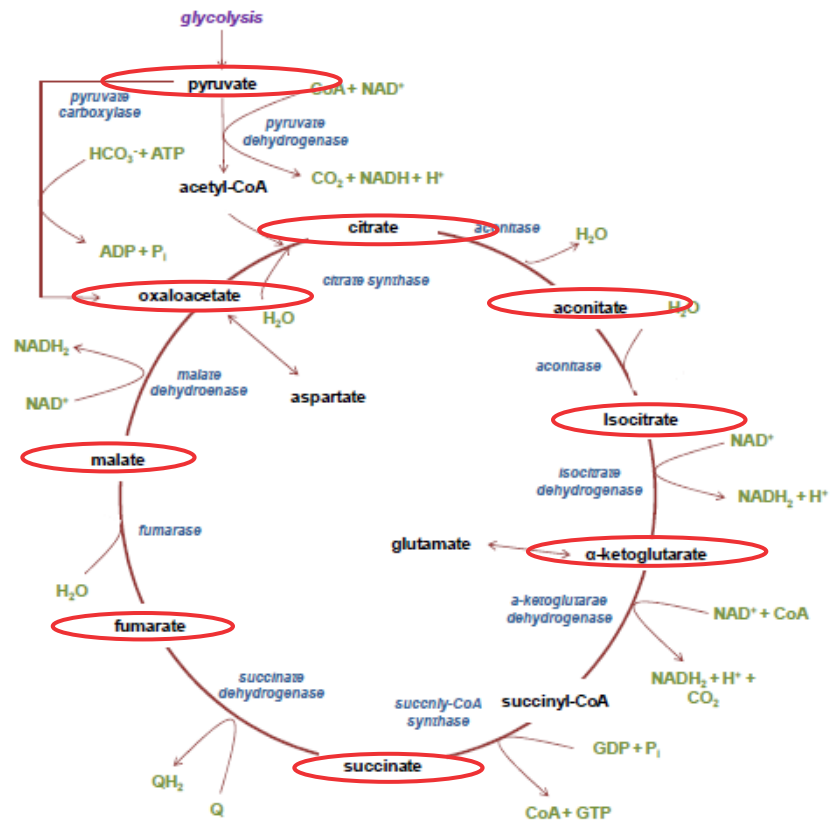
Hmotnostní spektrometrie IC-MS



Hmotnostní spektrometrie IC-MS

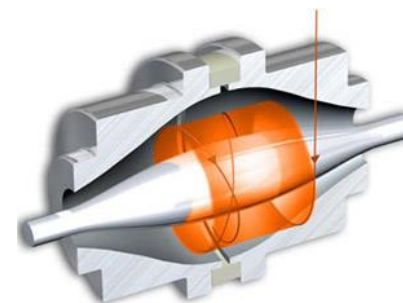
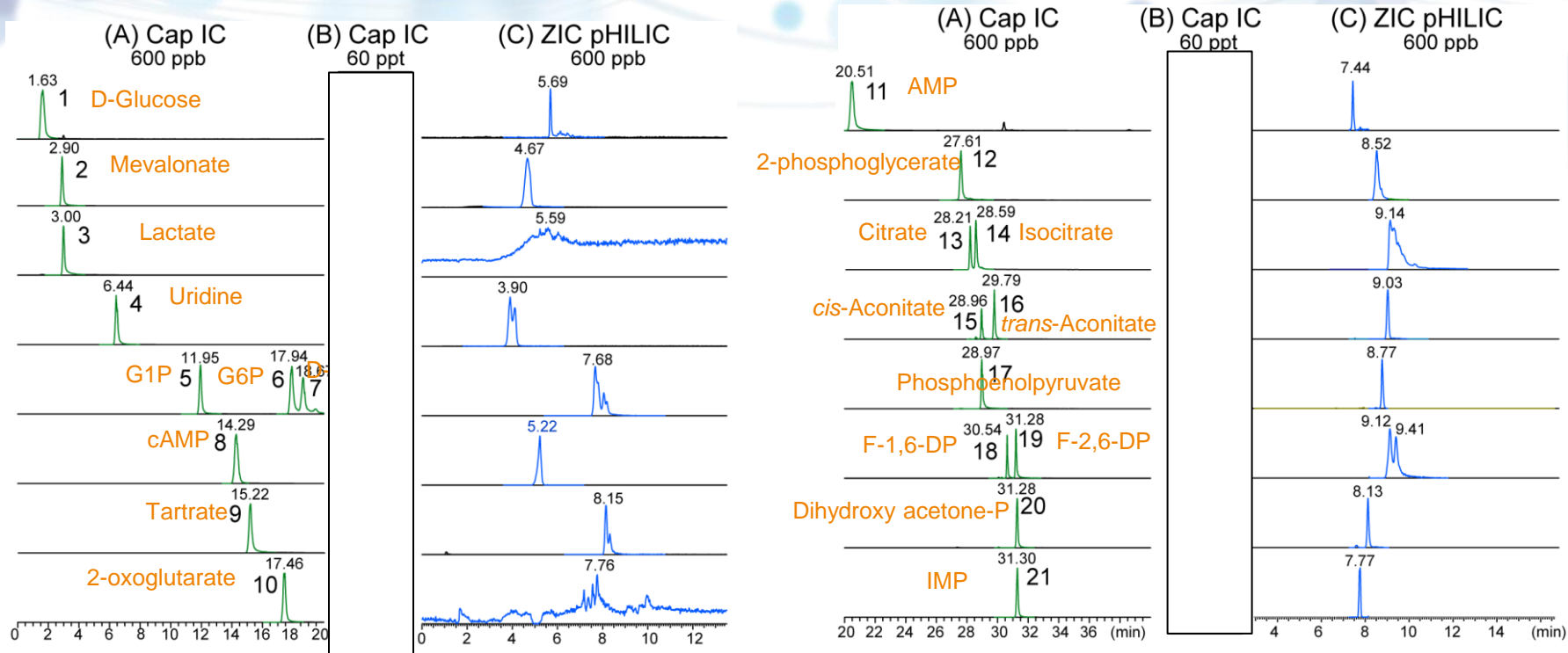


Glykolýza



Citrátový cyklus

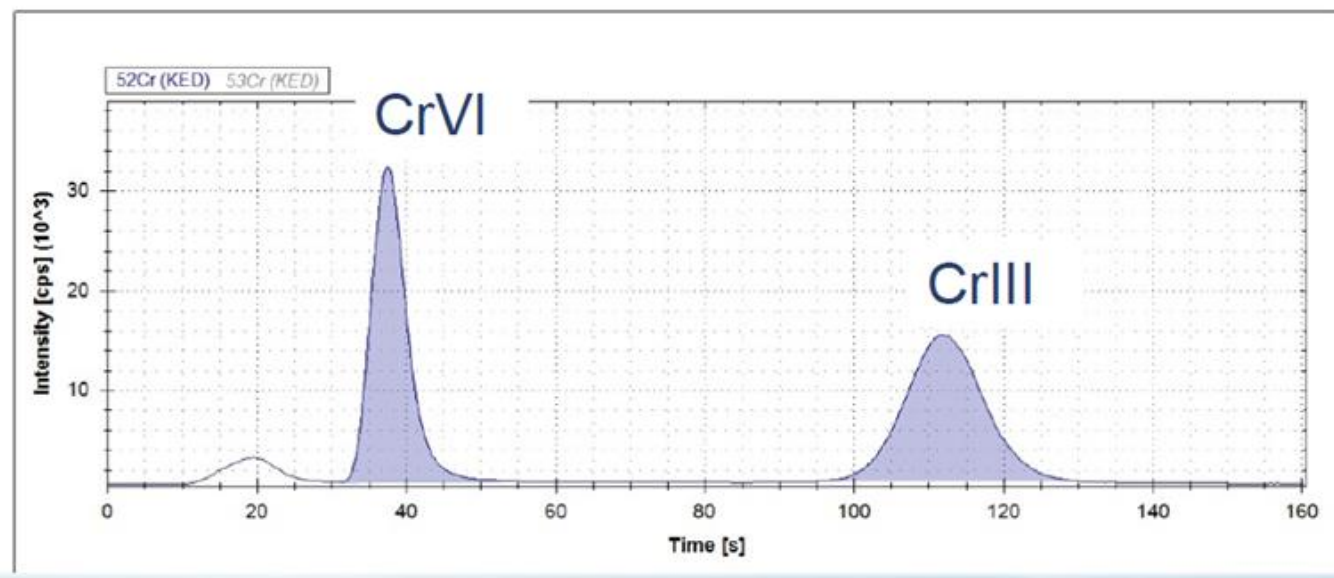
Hmotnostní spektrometrie IC-MS



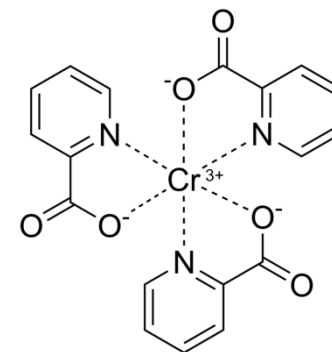
Hmotnostní spektrometrie IC-ICP-MS



Column	Dionex AG-7 (2x50mm)
Mobile Phase	0.35 mol L ⁻¹ HNO ₃
Flow rate	0.4 mL min ⁻¹
Injection volume	20 µL



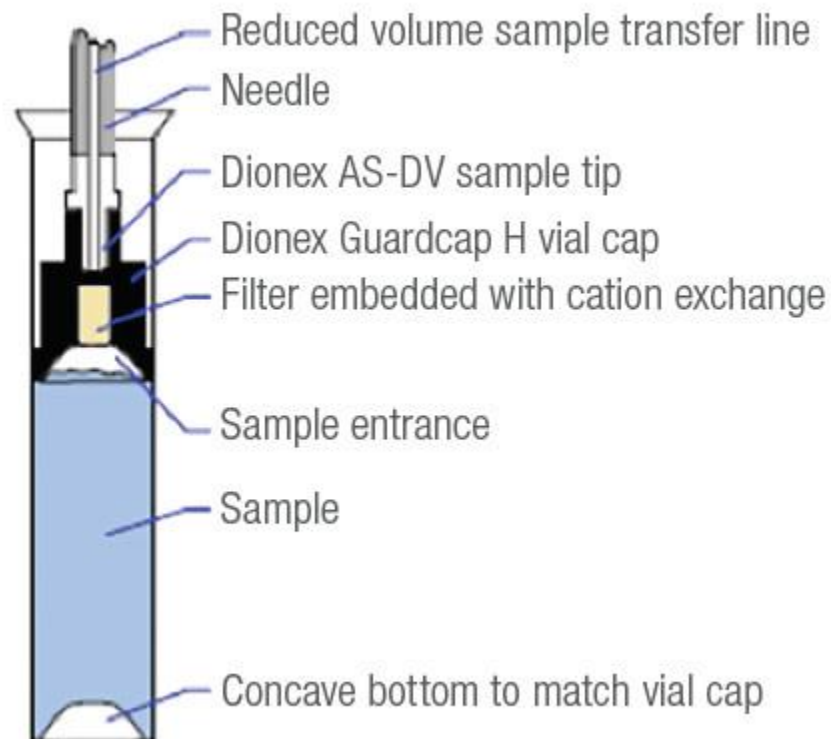
LOD: 0,2 ng·L⁻¹



Dionex GUARDCAP H VIAL CAPS

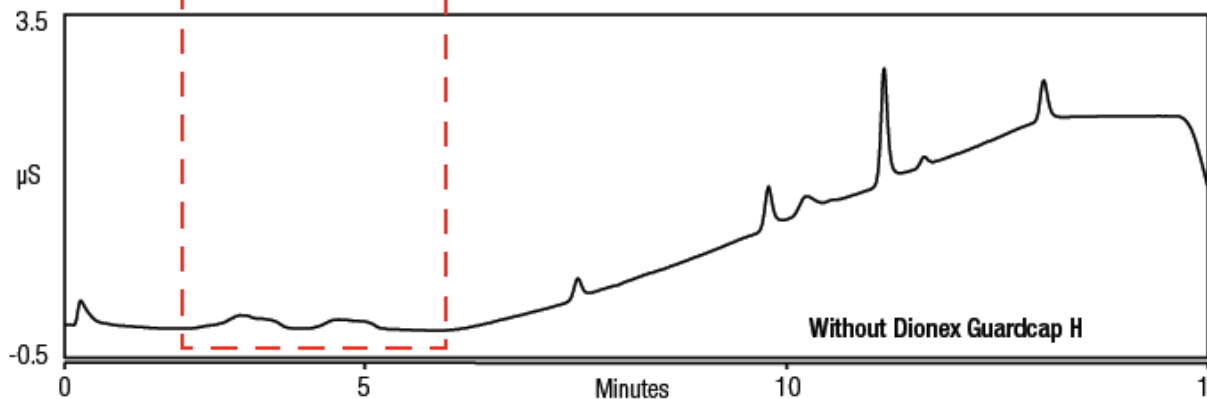
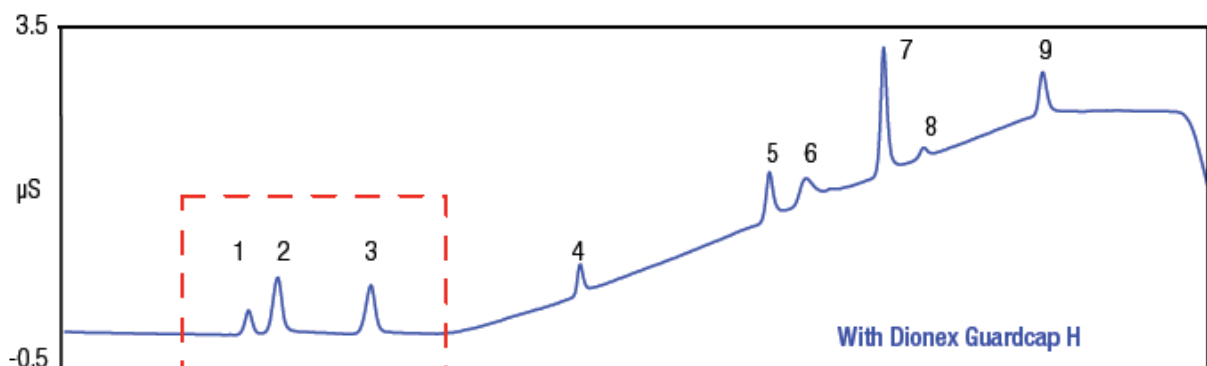
novinka pro usnadnění přípravy vzorků

- odstranění divalentních kationtů
- neutralizace bází
- filtrace
- 5ml Dionex PolyVials
- autosampler AS-DV
- sorbent Dionex OnGuard H



Dionex GUARDCAP H VIAL CAPS

Zlepšení účinnosti separace díky snížení pH vzorku při použití víček Dionex Guardcap H



Column: Dionex IonPac AG17-C /
Dionex IonPac AS17-C (2 × 250 mm)
Eluent : 1 mM KOH from 0 to 3 minutes,
1-35 mM KOH from 3 to 10 minutes,
35 mM KOH from 10 to 12 minutes
Eluent Source: Dionex EGC 500 KOH Cartridge
Flow Rate: 0.25 mL/min
Inj. Volume: 2.5 µL
Sampling Volume: 500 µL
Detection: Suppressed Conductivity,
Dionex AERS 500 Suppressor,
AutoSuppression, Recycle mode

Peaks:

1. Fluoride	20 ppb
2. Acetate	1 ppm
3. Formate	1 ppm
4. Chloride	30 ppb
5. Nitrate	1 ppm
6. Carbonate	---
7. Sulfate	1.5 ppm
8. Oxalate	100 ppb
9. Phosphate	1.5 ppm

Dionex GUARDCAP H VIAL CAPS

- snadné použití
- zjednodušení přípravy vzorku
- prodloužení životnosti kolony

Vyžádejte si vzorek k vyzkoušení - zdarma do 30.6.2017



Děkujeme za pozornost!

