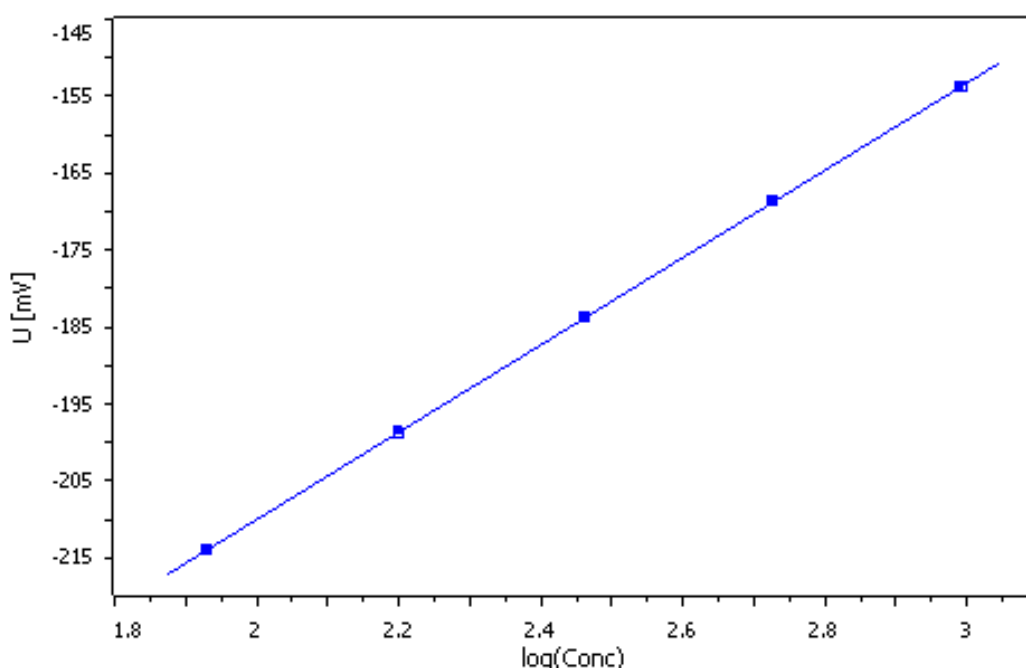


# Potassium in electrolyte powder

Fast and economical determination by standard addition



The determination of the potassium content in foodstuffs plays a major role in the food and dietary supplement industry, as potassium is an essential mineral nutrient for humans. It is an important intracellular cation and also plays an important role in processes within cells, where it is involved in the regulation of numerous body functions like blood pressure, cell growth and muscle control.

As a dietary supplement, potassium is present in e.g., electrolyte powder, electrolyte drinks and food supplements. To quantify the potassium content in such products, e.g. flame photometry can be used. In this work, an alternative, ion measurement by standard addition, is described, which is fast, inexpensive and simple to use.

# Method description

## Sample

Electrolyte powder

## Sample preparation

Dissolve one unit (e.g., sachet, cap, tablet) of electrolyte powder in 250 mL deion. water,

## Configuration

814 USB sample processor (1T/2P)	2.814.0020
Titration head, 3x SGJ 14	6.1458.040
Sample rack 22 x 120 mL	6.2041.470
Sample beakers plastic (PP), 120 mL, 250 pieces	6.1459.300
Propeller for 120 mL beaker	6.1909.050
802 Rod stirrer	2.802.0020
<i>tiamo</i> 2.5 full	6.6056.252
867 pH module	2.867.0010
800 Dosino, 3x	2.800.0010
Dosing unit, 50 mL	6.3032.250
Dosing unit, 10 mL, 2x	6.3032.210
Cable USB A- mini DIN 8 pin	6.2151.000
Electrode cable 2 m / F	6.2104.030
Electrode cable 2 m, 2 x 2 mm	6.2104.150
Combined K-ISE	6.0510.110
Temperature sensor Pt1000	6.1110.100

## Solutions

Standard solution for additions	$\beta(K^+) = 10000 \text{ mg/L}$ 18.64 g of dried potassium chloride is weighed into a 1 L volumetric flask and filled up to the mark with deion. water.
ISA	$c(\text{NaCl}) = 3 \text{ mol/L}$ 175.3 g sodium chloride is weighed into a 1 L volumetric flask and filled up to the mark with deion. water.
Sodium hydroxide	$c(\text{NaOH}) = 1 \text{ mol/L}$ 40 g sodium hydroxide is weighed into a 1 L volumetric flask and filled up to the mark with deion. water

## Analysis of samples

5 mL prepared sample, 10 mL ISA and 1 mL  $c(\text{NaOH}) = 1 \text{ mol/L}$  are pipetted into the measurement vessel and diluted with 34 mL deion. water. The standard addition is carried out with  $\beta(K^+) = 10 \text{ g/L}$ . In between each measurement the electrode is conditioned for 30 s in  $c(\text{KCl}) = 0.1 \text{ mol/L}$  and then well rinsed with deion. water.

## Parameters

Mode	STDADD auto
Number of additions	4
Volume auxiliary solution	45 mL
Stop volume	10 mL
Dosing rate	Medium
Delta U	15 mV
Signal drift	0.5 mV/min
Min. waiting time	10 s
Max. waiting time	300 s
Measuring interval	2.0 s
Stirring rate	8

## Result

Sample	mg $K^+$ per unit	$s_{\text{rel}} / \% (n = 5)$
Electrolyte powder	217.3	0.7
Capsule	56.9	0.5

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