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Introduction

In quality control, high reproducibility of analytical methods is essential in order to be able to make reliable statements about the obtained results.

The following example of the analysis of three pure substances shows that the amino acid analyzer ARACUS is suitable for use in quality control due to its very low standard deviation of less than 0.85 %. In this way it makes an important contribution to ensuring defined quality requirements.

Sample Preparation and Analysis

Leucine solution: weight 131.1 mg Leu into a 100 mL volumetric flask and refill to the measuring mark with 1N HCl (Leu concentration 10 $\mu\text{mol/mL}$) and shake. After that diluted the solution 1:100 with 1N HCl (Leu concentration 100 nmol/mL).

Glutamic Acid solution: weight 147.1 mg Glu into a 100 mL volumetric flask and refill to the measuring mark with 1N HCl (Glu concentration 10 $\mu\text{mol/mL}$) and shake. After that diluted the solution 1:100 with 1N HCl (Glu concentration 100 nmol/mL).

Method amino acid analysis

The samples were analyzed by the Amino Acid Analyzer ARACUS, manufactured and distributed by membraPure GmbH worldwide. ARACUS is using the classic routine analysis of amino acids by post-column derivatization with ninhydrin and the detection at 570 nm. The results were evaluate and calculated by the software aminoPeak and the use of a Leu-standard solution Glu-standard solution (purchased by Bachem) (100 nmol/mL).



Figure 1: Amino Acid Analyzer ARACUS

Precision

The precision of the method was determined by repeatability (intra-day). The intra-day precision was calculated as the relative standard deviation RSD (coefficient of variation CV %) of results from ten runs of the sample during the same day.

Suitable use of the amino acid analyzer in quality control



Results

Table 1: Amino Acid Leucine and Glutamin acid in a solution of 100 nmol/mL.

Run	Sample Leu 1	Sample Leu 2	Sample Glu
1	99.89	99.97	99.54
2	100.7	99.66	100.2
3	100.3	99.1	100.6
4	99.82	99.66	98.61
5	99.44	99.01	99.67
6	98.37	98.37	99.52
7	99.46	100.9	99.09
8	98.23	100.2	99.45
9	99.65	99.2	100.1
10	99.16	99.83	98.99
Mean	99.54	99.59	99.58
SD	± 0.8091	± 0.7084	± 0.6013
RSD	0.81 %	0.71 %	0.60 %

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