

Highlights of Analytical Chemistry in Switzerland

Highlights of Analytical Chemistry in Switzerland

Does A.M. Have a Tumour in the Pancreas?

Ursula Gutteck-Amsler and Katharina M. Rentsch*

*Correspondence: PD Dr. K.M. Rentsch, Institute for Clinical Chemistry, University Hospital Zurich, CH-8091 Zürich

Tel.: +41 44 255 22 90, Fax: +41 44 255 45 90, E-Mail: rentsch@ikc.uzh.ch

Keywords: APCI · Blood analysis · HPLC-MS · Hypoglycaemia · Sulfonylurea drugs

The aim of the clinical toxicological laboratory is to identify substances which might harm the patient. This may be the elucidation of an acute intoxication due to the intake of an overdose, the clarification of a chronic toxic process or the verification of an intake of substances which should not be taken by a patient.

Patients with recurring hypoglycaemia either have a deregulation in glucose metabolism, a tumour in the pancreas or take anti-diabetic drugs without having diabetes.

A.M. was admitted to the hospital with recurring hypoglycaemic events in order to clarify the symptoms. One of the first tests performed is the fasting test, which does not allow the patient to eat during max. 72 h in order to evaluate the regulation of glucose metabolism. Regularly blood samples are taken to measure glucose concentration, different hormone levels, and in order to exclude the intake of anti-diabetic drugs, a screening for these drugs should be

offered. Thus A.M. had to fast and at the beginning and the end of the fasting test a blood sample was taken for the quantification of the anti-diabetic drugs.

The laboratory therefore needs a fast, specific and sensitive analytical method for the quantitative determination of sulfonylurea drugs.

Due to their chemical structure the commonly used GC-MS methods used in clinical toxicological laboratories cannot be applied for the quantification of sulfonylurea drugs. Consequently, an HPLC-MS method has been developed using atmospheric pressure chemical ionisation and a chromatographic separation on a C18 column with ammonium carbonate buffer and acetonitrile as mobile phase. The plasma samples are extracted using solid-phase extraction. The subsequent HPLC-MS separation can identify and quantify the drugs in question due to their retention times and molecular masses.

In the serum of A.M. the anti-diabetic drug glibenclamide was detected, which was intended for use by her husband only. She has no pancreatic tumour.

Applying this method on samples from patients with recurring hypoglycaemia helps to reduce costs for invasive diagnostic tools, which are necessary to look for tumours in the pancreas.

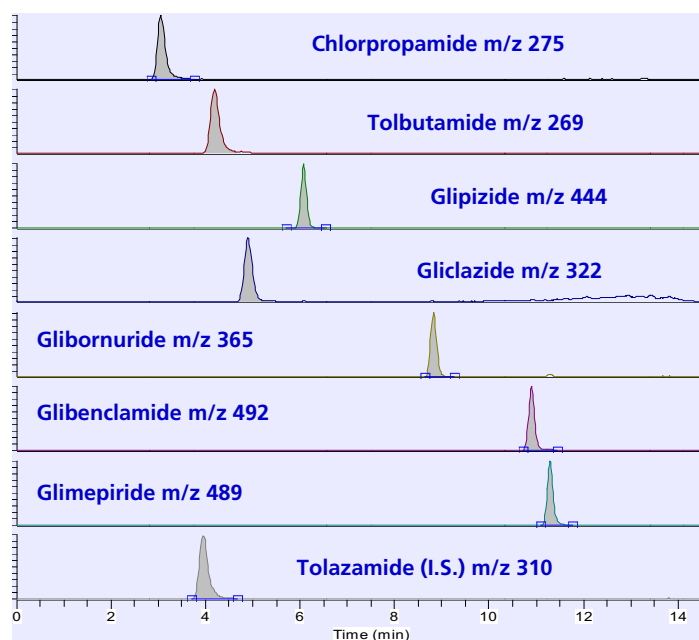
Received: February 16, 2007

Reference

K. M. Rentsch, U. Gutteck, A. von Eckardstein, *Ther. Drug Monit.* **2003**, 25, 501.



Blood samples being transferred to the centrifuge



HPLC-MS chromatograms showing the separation of the seven sulfonylurea drugs available in Switzerland

Can you show us your analytical highlight?

Please contact: Dr. Veronika R. Meyer, EMPA St.Gallen, Lerchenfeldstrasse 5, 9014 St.Gallen
Phone: 071 274 77 87, Fax: 071 274 77 88, Mail to: veronika.meyer@empa.ch