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## **Detection of Oral Antidiabetic Agents in Human Urine by LC-ESI-MS/MS**

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### **Extended abstract**

Since 1999, insulin belongs to the list of prohibited substances of the International Olympic Committee and the World Anti-Doping Agency. Except for patients suffering from insulin-dependent *diabetes mellitus*, the administration of insulin is not allowed. Therapeutics developed to treat non-insulin-dependent *diabetes mellitus* act as releasing factors of endogenously produced insulin or improve its efficiency mediating the glucose uptake into insulin-dependent tissues. Hence, these compounds are also relevant for sports drug testing, and a fast, robust, and sensitive assay was developed to identify 12 oral antidiabetic agents or respective hydroxylated metabolites in human urine. Urine specimens are enzymatically hydrolyzed, target analytes are extracted by liquid-liquid-extraction and identified by means of liquid chromatography interfaced to tandem mass spectrometry by electrospray ionization. Detection limits of respective drugs ranged between 10 ng/mL and 30 ng/mL and metabolites of therapeutics were characterized by diagnostic fragmentation pathways upon collisionally activated dissociation of protonated molecules. In Figure 1, an extracted ion chromatogram of a urine sample fortified with 12 oral antidiabetic agents is shown that demonstrates the selectivity of the established assay at a concentration of 30 ng/mL.

For further details, please refer to

Thevis, M., Geyer, H., Schänzer, W.:

Identification of oral antidiabetics and their metabolites in human urine by liquid chromatography/tandem mass spectrometry – a matter for doping control analysis  
Rapid Commun Mass Spectrom 2005; 19: 928-936.

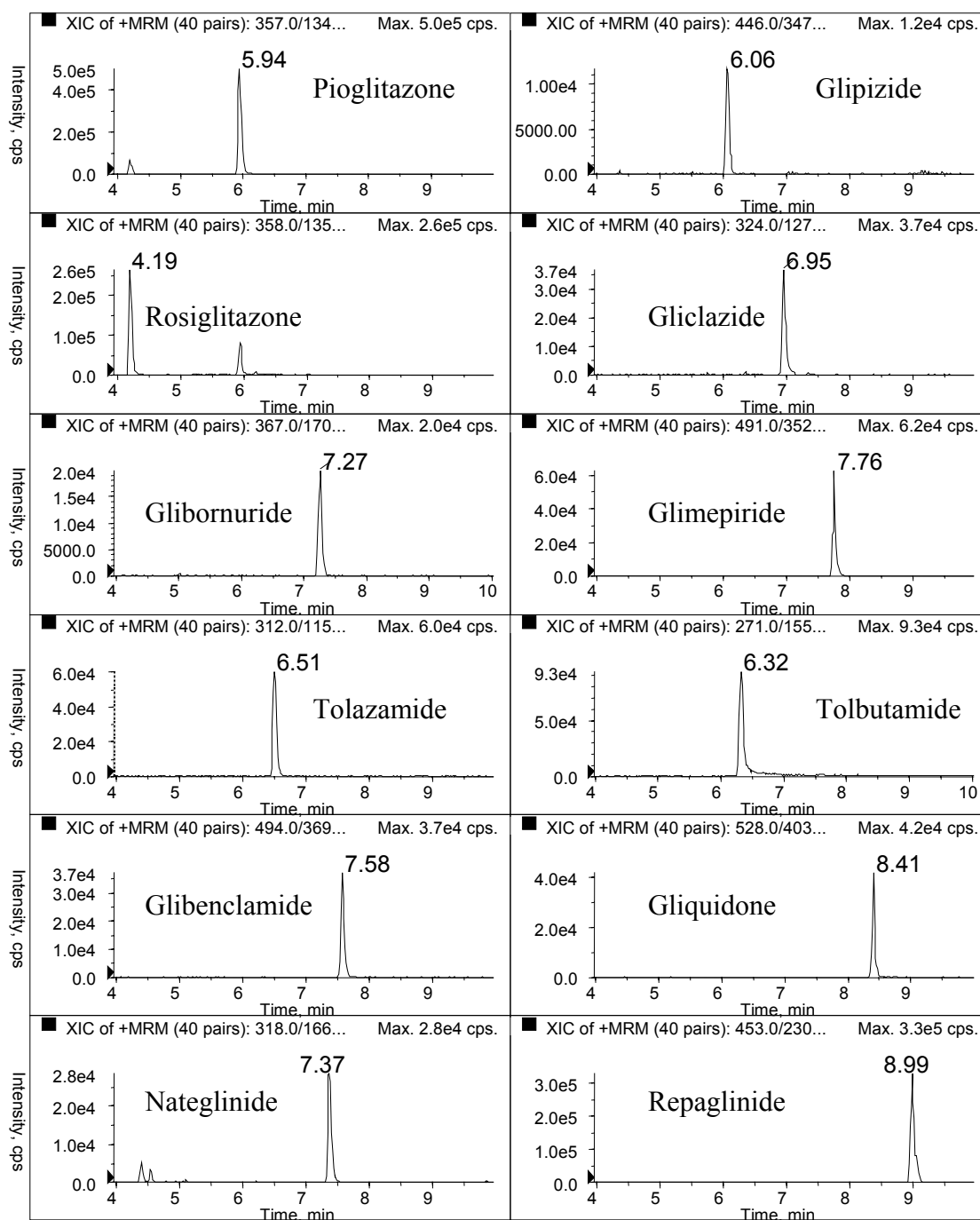


Figure 1: Extracted ion chromatograms of a urine sample fortified with 30 ng/mL of 12 oral antidiabetic agents. The sample was analyzed on an Agilent 1100 Series HPLC using a Macherey-Nagel Pyramid column (4x70mm) interfaced by ESI to an Applied Biosystems API4000 Qtrap.