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Untargeted Detection of Unaltered Glucuronoconjugated Metabolites of Metandienone in Sports Drug Testing by LC-MS/MS

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The use of non-targeted approaches in every field of analysis is increasing day by day. Normally, this kind of analyses are based in high resolution mass spectrometry techniques, as the exact mass provided by the instruments allows to elucidate new markers.

The approach presented here by Ms Argitxu Esquivel, though, uses a triple quadrupole as analyser, taking advantage of the common losses acquisition mode to detect new metabolites taking into account previous knowledge about the molecules.

One of the main advantages of the purposed methodology, which improves the detection capabilities of anabolic androgenic steroids (AAS) in sport, is that it does not requires expensive high resolution equipment to elucidate markers and also that it allows to monitor dopant substances in human fluids up to 60 days after the consumption of the drug. This is an important advance in this kind of testing analyses in human urine, as normally the resilience time of other monitored compounds is quite lower.

This kind of researches set the new basis for anti-doping analysis but also constitutes an interesting point of view for further studies, not only in sports field but in toxicological and biomedical fields, as the quantification of new psychoactive substances (NPS) or disease-related metabolites.

The Use of Ion Mobility Separation and Collision Cross Section for the Comprehensive Analysis of Complex Samples

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Ion mobility separation is a recent technique with a lot of potential for the analysis of complex-matrix samples. Mr Steve Preece presented the developments waters has been doing in this field, and presented us the advantages of this powerful technique.

Specially regarding non-targeted analysis, the separation of the different compounds is highly important for the further data analysis. In these sense, comprehensive techniques as GCxGC or LCxLC offer an additional separation when one dimension is not enough for the correct separation between analytes with similar characteristics. Even though, to achieve separation of isomers, normally a chiral column is needed, and it might be specific for some compounds not affecting the rest of them.

Ion mobility makes use of a N_2 stream pushed towards the molecules after one-dimensional chromatography, being capable of separating all kind of isomers and compounds which traditionally co-elute when applying different separation techniques.

The potential of this technique is huge, and I am completely sure that plenty of studies regarding metabolomics in food matrices as well as other non-targeted based experiments pursuing the finding of biomarkers for disease will make use of Ion mobility, taking extraordinary results.

Carlos Sales Martínez