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LC-MS/MS of ultra-trace plant hormones in limited samples

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Bioactive substances often play their bio-functional roles at a very low concentration, for example, plants and insects may response to a minute variation of some special bio-chemicals such as hormones. This seriously challenges analytical methodology which is worsening in many cases by the unavailability of samples. In this presentation we are discussing a strategy to overcome the issues by use of high performance chromatography hyphenated with tandem mass spectrometry, on the topic of precise determination of plant hormones that exist in only a single tiny flower or even its floral organ. The related data will concern mainly with the distributions of a family of plant hormones, gibberellins (GAs) and their concentration, along the synthetic and metabolic pathways of GA1 and GA4 in different floral organs of one flower from a model plant *Arabidopsis thaliana*. The flower has only a size even smaller than a *Drosophila melanogaster*. The determination was enabled by use of new mass spectrometric techniques in combination with chemistry to sensitize the detection. This is validated to be an effective way at present to overcome the detection problem in ultra-trace analysis. The presented method is also extendable to the quantitative analysis of other bioactive organic acids.

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