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Novel approach for targeted profiling of plant ecdysteroids by UHPLC-MS/MS vs. SFC-UV/MS

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Plant ecdysteroids (PEs) are a family of about 300 polyhydroxylated triterpenoids related in structure to the major invertebrate steroid hormone 20-hydroxyecdysone (20E). ECs were originally found in animal sources and recognized as steroidal hormones controlling moulting (ecdysis) and metamorphosis in insects. Later, some of them were discovered to be present also in terrestrial plant families. Their role in plants is still not fully elucidated but at least it is clear that they don't have hormonal function like in insects and serve the most probably as the defense against insect herbivores. The pharmacological and medicinal studies in humans show that PEs act as very effective adaptogens and elicitors of anabolic effects on skeletal muscle in a non-androgenic manner. Methods based on the use of HPLC have historically been most frequently used for separating ecdysteroids isolated from different biological sources either in analytical or in preparative scale. However, in the last decade, UHPLC and SFC experienced a great boom in separation science area. Here, we present new approach for analysis of PEs that is based on UHPLC separation in combination with tandem MS detection. The selected analytes of PEs character (20E, polypodine B, ajugasterone C, stachysterone C and ponasterone A) are separated within 4.5 min using RP column and detected in MRM mode. The method provides sufficient chromatographic resolution and sensitivity with LOD ranging between 0.12 and 5.4pg. To compare the results obtained by UHPLC-(+ESI)-MS/MS technique, we developed also the method based on SFC with both UV and MS detection.

Biography

Danuse Tarkowska has completed her PhD from Palacky University and Post-doctoral studies from Umeå Plant Science Centre. She is Senior Researcher at the Laboratory of Growth Regulators, Centre of the Region Hana for Biotechnological and Agricultural Research. His current focus is on the development of methods for extraction and purification of plant hormones, analytical methods for plant hormones and other signaling molecules. She has published more than 40 papers in reputed journals (sometimes cited without self-citations 872, h-index: 12). She is the member of Czech Chemical Society and Phytochemical Society of Europe.

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