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Derivatization-targeted analysis of amino compounds from *Cardueae* species by liquid chromatography tandem mass spectrometry

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Plants amino compounds (e.g. amino acids, biogenic amines) play important roles for the plant themselves and for human well-being. Reversed-phase liquid chromatography tandem mass spectrometry (RPLC-MS/MS) is one of the most used technique for amines analysis, but due to their structural characteristics, analyzing them in their native form remains challenging. Therefore, a prior derivatization step, to overcome this issue, is necessary [1,2]. In this work the use of neutral loss scan mode (NLS) is proposed for the first time in the investigation of amino compounds derivatized with diethyl ethoxymethylenemalonate (DEEMM) and analyzed by RPLC-MS/MS, to obtain an easy and straightforward method for the detection of known and unknown amines. The procedure has been firstly optimized on a model sample containing eight amino acids, with good results in terms of DEEMM derivatives detection and repeatability. The method was then successfully applied to the analysis of five *Cardueae* plant extracts, with 18 amino acids and 3 other amines being putatively identified. A statistical analysis on the collected data revealed a stability in the

derivatives profiles among both the different selected species and samples from the same species with different geographical origins. The obtained results confirm the effective use of the proposed approach in the analysis of plants amino compounds for different purposes.

References

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- [2] R. Dahl-Lassen, J. van Hecke, H. Jørgensen, C. Bukh, B. Andersen, J.K. Schjoerring, *Plant Methods.* 14 (2018) 1–9. <https://doi.org/10.1186/s13007-018-0277-8>

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