Abstract

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UPLC-MS metabolome based classification of Lupinus and Lens seeds: A prospect for phyto-equivalency of its different accessions

Fabaceae is well-known for its seed nutritious and bioactive composition as exemplified by Lupinus and Lens. Developing efficient analytical approaches for profiling their bioactive matrix is a prerequisite to provide proof for their health benefits nutritive traits. Eight Lupinus and Lens seed accessions were subjected to liquid chromatography-mass spectrometry (UPLC-MS)-based metabolomic study, which identified 66 metabolites, viz. flavonoids, alkaloids, saponins, phenolics, fatty acids and sphingolipids. Chemometric tools were explored to assess heterogeneity across the two genera leading to elucidation of the species-most enriched and differential metabolites. The two dark-colored lentil cultivars are identified as the richest source of functional foods with presumed therapeutic benefits however, Lupinus hispanicus was proved to be the most nutritive accession. To our knowledge, this study provides the first UPLC-MS-based comparative metabolite profiling of Lupinus and Lens seeds. This platform was also able to discern metabolites diversity at the intraspecific level among Lupinus species and Lens cultivars.