

## **Comprehensive analysis of floral scent and fatty acids in nectar of *Silene nutans* through modern analytical gas chromatography techniques**

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*Silene* is one of the largest genera of the world's flora, including around 700 species. Among them, the nocturnal moth-pollinated *Silene nutans* seems a complex species comprising at least seven genetically differentiated lineages.

In the present study floral scent and fatty acid composition of nectar of four reproductively isolated genetic lineages of *S. nutans* from different regions of Western Europe were evaluated to highlight differences among them. Comprehensive bidimensional gas chromatography (GC×GC) was used to allow enhanced separation of these complex samples.

Floral scents were collected by trapping volatile organic compounds (VOCs) from flowering plants grown in a controlled chamber, onto sorbent-packed thermal desorption (TD) tubes placed near flowers prior separation through GC×GC and detection by mass spectrometry (MS). This analytical workflow provided a comprehensive chemical fingerprint in a single analytical run. The differences among lineages were revealed by a novel data mining and chemometrics software that enabled the extraction of useful information through powerful multivariate statistical analysis.

Fatty acid (FA) profile of nectar, a very poorly investigated topic, was also evaluated. FAs, from crude nectar collected with microcapillary tubes from flowers grown under controlled conditions, were extracted and derivatised into methyl esters (FAMES) before analysis by GC×GC and Flame Ionisation Detector. Statistical analysis was performed on FAMES profiles to underline differences between lineages.