

Flavones and Flavor Components in Two Basil Leaf Chemotypes

The chemical composition of herbs and spices can vary dramatically between different species and different growing conditions. Herbs grown under different conditions that have different essential oil compositions are referred to as chemotypes.

Basil is an herb that has widely varying chemotypes^{1,2}. The difference between basil leaves from two different sources was easily observed by using DART. A leaf from a basil plant purchased at a grocery store was compared with a leaf from a Vietnamese restaurant. A small particle from each leaf was analyzed placed in front of the DART source. Mass spectra were obtained within seconds. Elemental compositions were confirmed by exact masses and accurate isotopic abundance measurements.

The resulting mass spectra (Figure 1) show dramatic differences between the two leaves. The basil leaf from the Vietnamese restaurant has a pleasing licorice-like flavor and a fragrant licorice-and-lemon aroma whereas the grocery store basil has a very mild clove flavor and a weak aroma. Both leaves contain terpenes and sesquiterpenes. The mass spectrum of the restaurant basil leaf (top figure) shows an abundant estragole (methyl chavicol, or *p*-allyl anisole) peak and a smaller citral peak. The grocery-store basil shows a weak eugenol peak. Furthermore, the restaurant basil leaf shows an abundance of hydroxymethoxyflavones. Flavones and related compounds are of interest because of possible antioxidant activity or other health benefits^{3,4}. The grocery store basil shows only weak peaks for these compounds.

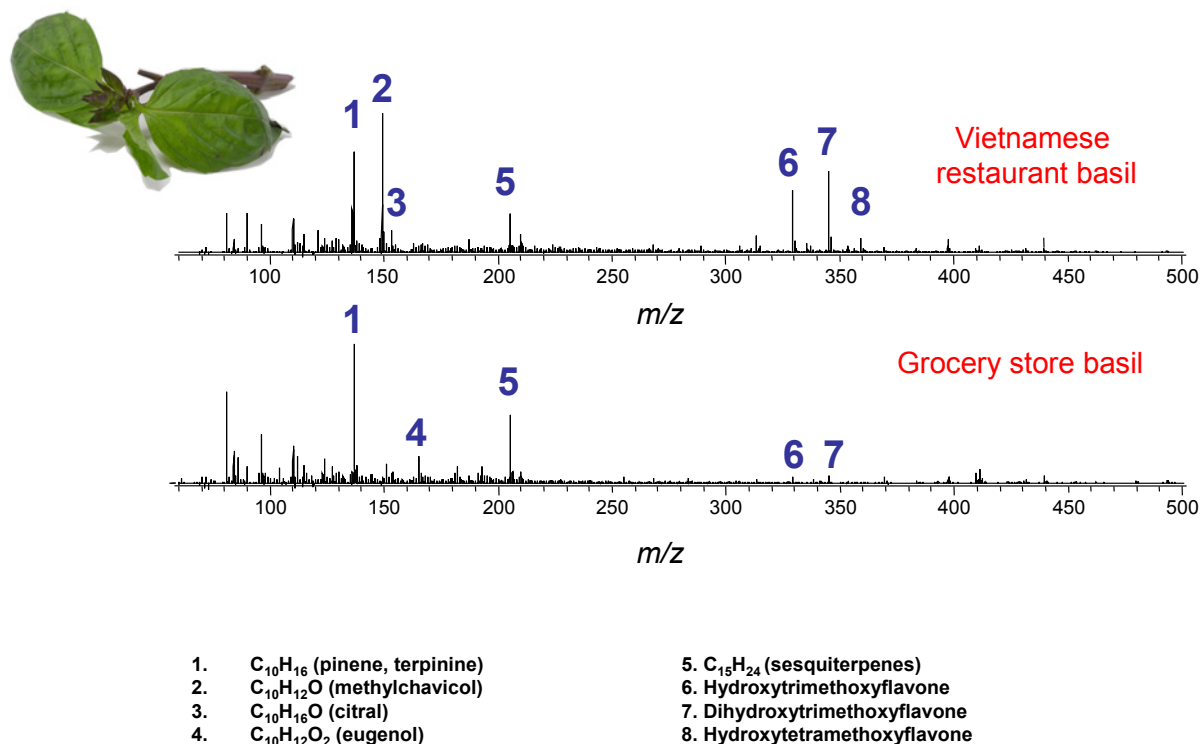


Figure 1. DART analysis of two different basil leaves.

Conclusion

DART can rapidly detect flavor components and antioxidants in herbs and spices and can be used to discriminate between different chemotypes.

References

- <http://www.plantphysiol.org/cgi/content/full/136/3/3724>
- <http://www.hort.purdue.edu/newcrop/CropFactSheets/basil.html>
- <http://www.hort.purdue.edu/newcrop/ncnu02/pdf/juliani.pdf>
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