

Measurement of volatile organic compounds may reveal wild rocket salad quality

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When consumers buy fresh fruit and vegetables freshness is of essential importance. Most of us have brought home packaged wild rocket salad or other leafy green vegetables from the supermarket - only to discover upon opening the package that the leaves are rotten and unfit for human consumption.

Recent research from Aarhus University demonstrates that a relation exists between changes in wild rocket [quality](#) and the build-up of the so-called [volatile organic compounds](#) (VOCs). VOCs develop according to

the raw material quality at the time of packing, the O₂ permeability of the [packaging material](#), storage temperature and storage time.

The results are achieved by means of a new analytical method developed by Research Assistant Alexandru Luca from the Department of Food Science at Aarhus University in his recently finished PhD project.

"To evaluate the quality of packaged wild rocket it is not sufficient just to evaluate colour - you also have to evaluate odour and whether leaves are rotten, which is almost impossible without opening the packaging material," says Alexandru Luca, who further explains that there was a need to develop a method to identify if packaged wild rocket was rotten.

Commercial perspective

Thus, the superior project aim was to develop a method to examine quality changes in packaged [leafy green vegetables](#) after harvest - based on the release of VOCs.

The actual analytical method which is based on solid-phase microextraction and gas chromatography coupled with mass spectrometry is complex and time-consuming. The method was applied to examine the changes in the VOCs of various wild rocket qualities stored at different temperatures and O₂ and CO₂ concentrations. Further, Alexandru Luca examined the causes for the emission of the different volatile compounds:

"The project demonstrates that the release of VOCs from wild rocket may be related to the quality of the raw material at the time of packing, the O₂ permeability of the packaging material and the storage temperature and time after harvest. This knowledge may be used by the industry and scientists to develop new management and packing systems for leafy [green vegetables](#)," says Alexandru Luca and he further explains

that there is a need to further develop the method before it is ready for commercial use.

In the long term perspective we hope that the method will be used by companies that produce and manage packaged fresh fruit and vegetables in the supply chain, e.g. seed companies, producers, packaging companies, transporters and retailers, thus providing consumers higher quality packaged fresh produce.

Provided by Aarhus University

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