

Exploring methods to detect microbial volatile organic compounds

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Microbial volatile organic compounds (mVOCs) are the detection indicator of food microbiological contamination. During metabolic process, microorganisms in food produce about 2,000 kinds of volatile metabolites with different chemical properties, including alcohols,

hydrocarbons, aldehydes, acids, ketones, ethers, esters, etc.

The low concentration, variety, and large polar span of mVOCs lead to the difficulty of detection. Therefore, efficient sample pretreatment technology, highly sensitive analytical instruments and reliable data analysis methods are the key to the enrichment and detection of mVOCs.

Researchers from the Wuhan Botanical Garden of the Chinese Academy of Sciences have reviewed recent advances in mVOCs detection. They summarized the types and mechanisms of mVOCs, as well as the sampling methods of mVOCs such as headspace, purge and trap, solid phase microextraction and needle trap.

They also systematically reviewed the analytical methods of mVOCs (ion migration [spectrometry](#), electronic nose method, biosensor, etc.) and their applications in the detection of microbial contamination in food. The study was published in *Food Chemistry* on March 15.

According to the study, portable equipment, emerging new materials, high throughput and field detection, cost-effective and mass production of analytical instruments will become the promising direction of mVOCs detection in the future.

More information: Minxia Fan et al, Advances in microbial analysis: Based on volatile organic compounds of microorganisms in food, *Food Chemistry* (2023). [DOI: 10.1016/j.foodchem.2023.135950](https://doi.org/10.1016/j.foodchem.2023.135950)

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