P1_121

Understanding extra virgin olive oil flavor: nose-space analysis by PTR-ToF-MS and relation with dynamic sensory perception

Danny Cliceri[1], Iuliia Khomenko[1,2], Eugenio Aprea[1], Franco Biasoli[1], Flavia Gasperi[1]

[1]Fondazione Edmund Mach, Italy. [2]University of Innsbruck, Austria

Abstract

The extra virgin olive oil (EVOO) is highly appreciated for its unique flavor. The release kinetics of volatile organic compounds (VOCs) from EVOO matrix within the oral cavity is a complex process influencing the evolution of sensory attributes detected by consumers. For this reason, the nose-space (NS) analysis of VOCs may unravel the oral processes occurring during EVOO tasting. Proton Transfer Reaction-Mass Spectrometry coupled to Time-of-Flight (PTR-ToF-MS) analyzer offers the possibility to follow the foodstuff consumption in real time. PTR-ToF-MS was already successfully applied for NS analysis of apples, cereal bars, and coffee. In the present contribution, we report a feasibility study aiming to verify the applicability of NS analysis for the description and discrimination of EVOO individually and with respect to the combination of different food matrices which represent the real ways of EVOO consumption.

Two Italian EVOOs and three tasting conditions were tested: pure oil, oil combination with tomato sauce and with bread. A panel of 8 assessors (4 females and 4 males) evaluated the 6 products in duplicate. The sampling of NS was carried out by applying an ergonomic glass nosepiece to the nostrils of the judges and connected to the PTR–ToF–MS 8000 (Ionicon Analytik GmbH).

The individual profiles differed in peak intensity and duration for several masses detected. However, it was possible to distinguish the two types of oils. EVOO on bread showed higher signals intensities for all the subjects while adding tomato sauce decreased the volatile compounds reaching the nose.

Next step is the coupling of NS analysis with dynamic sensory profiles to study the relationship between VOCs released and sensory perception. The optimized combined methods will be applied to study different EVOO within the project “VIOLIN” (Project AGER2-Rif.2016-0169 funded by Cariplo Foundation), aimed to valorize and promote the PDO Italian EVOO.

Keywords

Nose-space analysis , Flavor perception, Aroma release, Extra virgin olive oil