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BOOK OF ABSTRACTS

OR12 - CHARACTERIZATION OF THE VOLATILE COMPOUNDS CONSTITUTING MASCARPONE CHEESE AROMA

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Mascarpone cheese, even if in view of its production process cannot be properly considered as a cheese, is the base ingredient for one of the most widely appreciated Italian dessert: the Tiramisù. To traditionally produce Mascarpone, fresh cream is heated and, while stirring, acid (eg. citric or tartaric) is added in order to force the coagulation of the matrix. During the heating process the whey protein denatures and aggregates or sticks to the casein micelles and the fat globule membrane. Consequently whey proteins partly remain in the cheese matrix during the following draining step. After a total of about 20 h of draining the final product is obtained [1]. In spite of its extensive use thanks to mild flavor and creamy consistency, Mascarpone has not been the subject of detailed studies. As far as we know, in addition to rheological studies aimed at characterizing its spreadability [2], no investigations have been carried out to individuate the volatile compounds contributing to the Mascarpone aroma profile. The objective of this study was to determine which volatile compounds are primarily responsible for the aroma of Mascarpone. HS-SPME GC-MS and PTR-ToF-MS have been used on several Mascarpone samples to identify the key-aroma compounds. Ketones represent a class of volatiles quantitatively relevant in the Mascarpone aroma, being 2-heptanone and 2-pentanone particularly abundant in its headspace. Organic acids, alcohols, esters and lactones were also found to be important classes of volatiles compounds. PTR-ToF-MS successfully detected the majority of peaks identified by GC-MS, highlighting clear differences among several commercial samples analysed. Principal Component Analysis, one-way ANOVA and boxplots were performed to assess and visualize the results. Statistics clearly confirm the differences in volatile profile among the samples, suggesting a possible role played by aroma in tracing this typical Italian product.

References

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