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AMPERE

MRFood 2022
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ABSTRACTS OF POSTER PRESENTATIONS

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NMR metabolomic profiling approach for the characterization of PDO and non-PDO cheeses

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PDO (Protected Designation of Origin) cheeses are products recognized as having higher quality and therefore can claim higher prices on the market. For this reason, in the last years there has been a flourishing of similar products that try to imitate PDO hard cheeses since when the cheese is sold in grated or shredded form, easy economic gain can be made by mislabelling common non-PDO cheeses with most PDO famous designations, such as "Grana Padano PDO" cheese. Depending on different characteristics such as geographical origin or production processing, cheeses can have different metabolite profiles which could be potentially used to differentiate among PDO and non-PDO samples.

In the last months, we adopted Nuclear Magnetic Resonance (NMR) spectroscopy with a metabolomic approach which could potentially be used to discriminate common non-PDO cheeses from other types of PDO cheeses, such as "Grana Padano". The approach encompasses the analysis of both aqueous and lipid fractions, extracted with simple procedures. Each fraction is then analyzed with NMR to obtain a fingerprint of the sample, which is then subjected to multivariate statistical analysis. The proposed NMR approach allowed the differentiation of Grana Padano from other cheeses, consisting of both PDO and non-PDO types. The great advantage of the proposed approach is a simple and fast sample preparation and these encouraging first results led to a potential new additional tool for checking the authenticity of PDO cheeses in the future.

References