



Società Chimica Italiana  
Divisione di Spettrometria  
di Massa



**MS  
Food**

**Day  
2022**

Florence (Italy), October 5 - 7, 2022

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# **BOOK OF ABSTRACTS**

**PROCEEDINGS OF THE  
7<sup>th</sup> MS FOOD DAY**

**October 5-7, 2022**

**Florence - Italy**

## Traceability of pasture milk using alkaloid profile

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**Summary:** *Alkaloids are basic nitrogen-containing organic compounds widespread in nature. The study evaluated the possibility to use them for trace pasture milk.*

**Keywords:** *traceability, alkaloids, milk, Orbitrap*

### Introduction

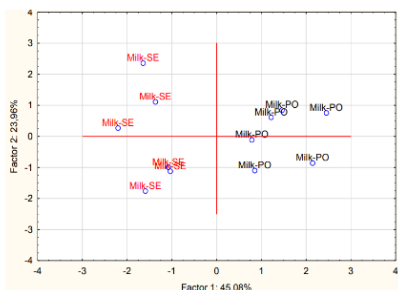
Alkaloids (alks), basic nitrogen-containing organic compounds, playing an important role in the interaction of plants with their environment. Some alks are responsible for the beneficial effects of plant extracts in humans in traditional medicine [1], nevertheless, other alks show highly toxic effects [2]. The alk profile of 62 different herbal plants, sampled in alpine pasture of north-eastern Italy were studied by Nardin et al. [1] bringing out an interesting bond with the plant families. The study evaluated the transfer of alks from herbs to milk and possibility to use these parameters as marker for milk traceability.

### Experimental

12 milk samples, collected from cows grazing in two different north-eastern Italy pastures, were extracted with H<sub>2</sub>O/MeOH/FA (40:40:20 v/v/v) and fat was removed with hexane. 30 µL were injected in the UPLC with an online clean-up performed by loading the sample on a SolEx HRP SPE cartridge. All the chromatograms were recorded in profile mode through a full MS-data dependent MS/MS experiment employing a Q-Exactive™ hybrid quadrupole-orbitrap mass spectrometer (HQOMS) equipped with heated electrospray ionization (HESI-II) interface. A targeted and untargeted studies were performed using 41 analytical standard and a homemade database.

### Results

In the milk samples, a significantly low number of alkaloids were detected showing that the transfer of these compounds does not always occur. Despite this, Figure 1 shows the samples perfectly divided in two groups corresponding to the pasture where the milk was produced.



**Figure 1.** *Principal Component Analysis of mass milk samples according to the two alpine pastures (PO= Poion alpinae; SE= Seslerion caeruleae)*

## **Conclusions**

Promising results have occurred in the use of alkaloids as markers for pasture milks.

## **References**

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2. Pabreiter, C.M., *Phytochemistry* (1992), 31(12), 4135-4137.
3. Nardin T, Larcher R, Barnaba C, Bertoldi D, Pasut D, Romanzin A, Piasentier E., *Nat Prod Res.* (2022), 12, 1-8.