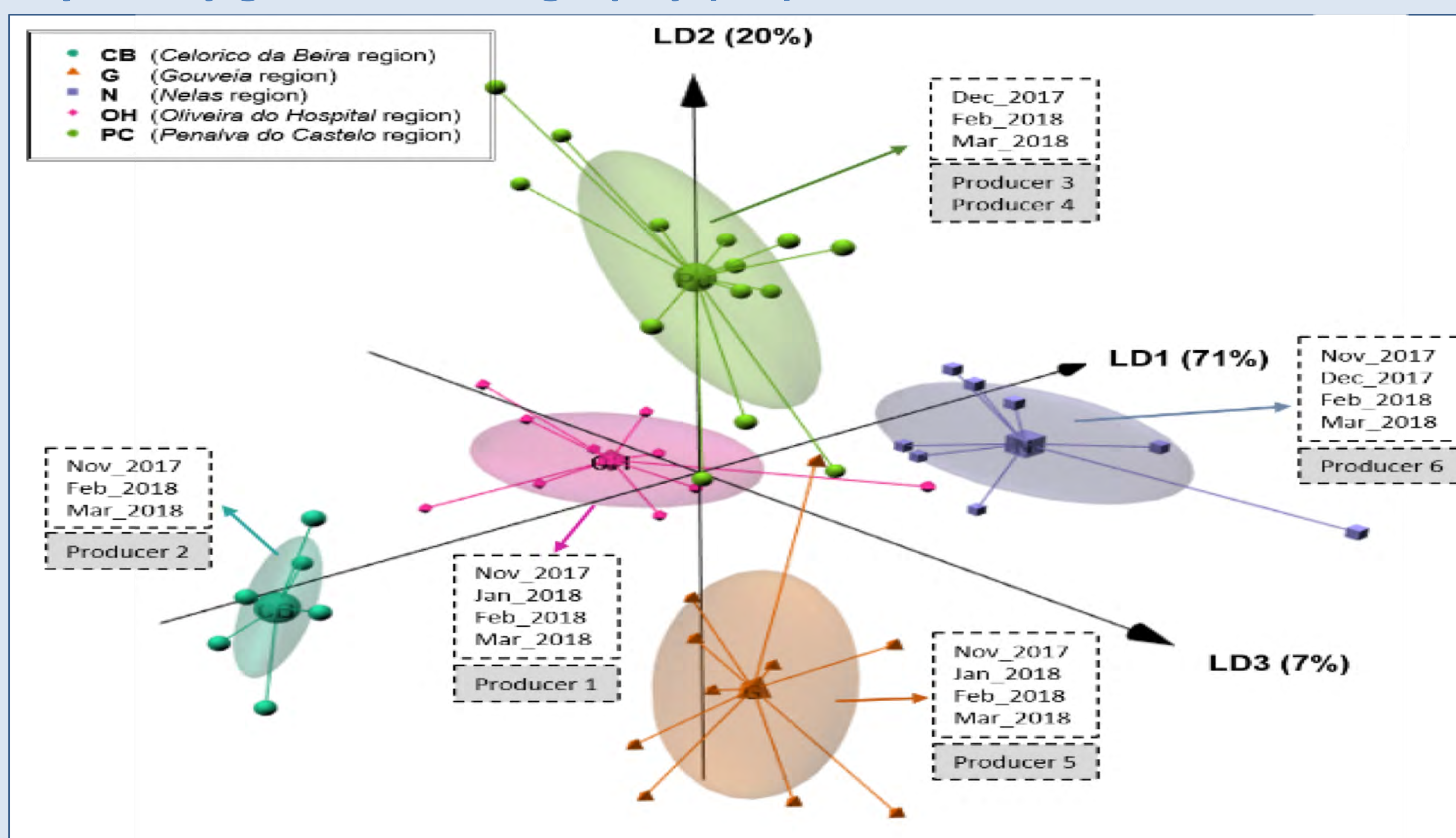
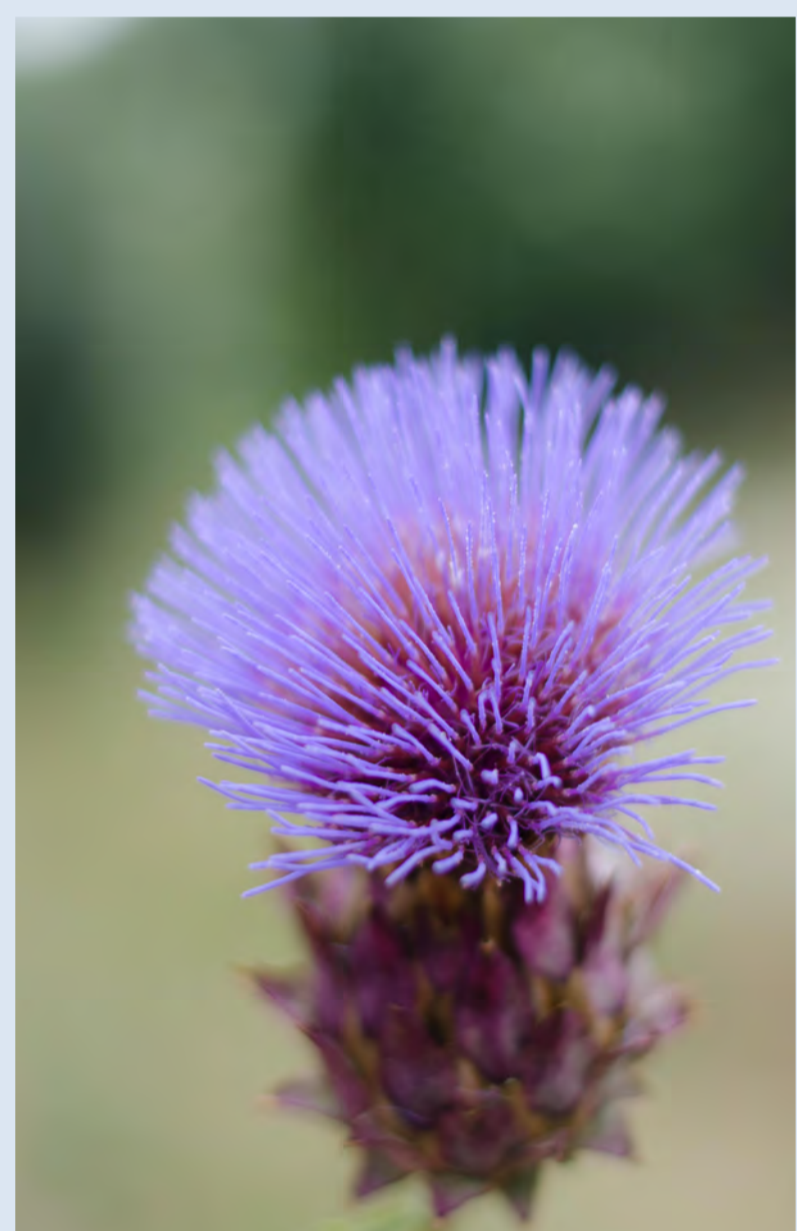
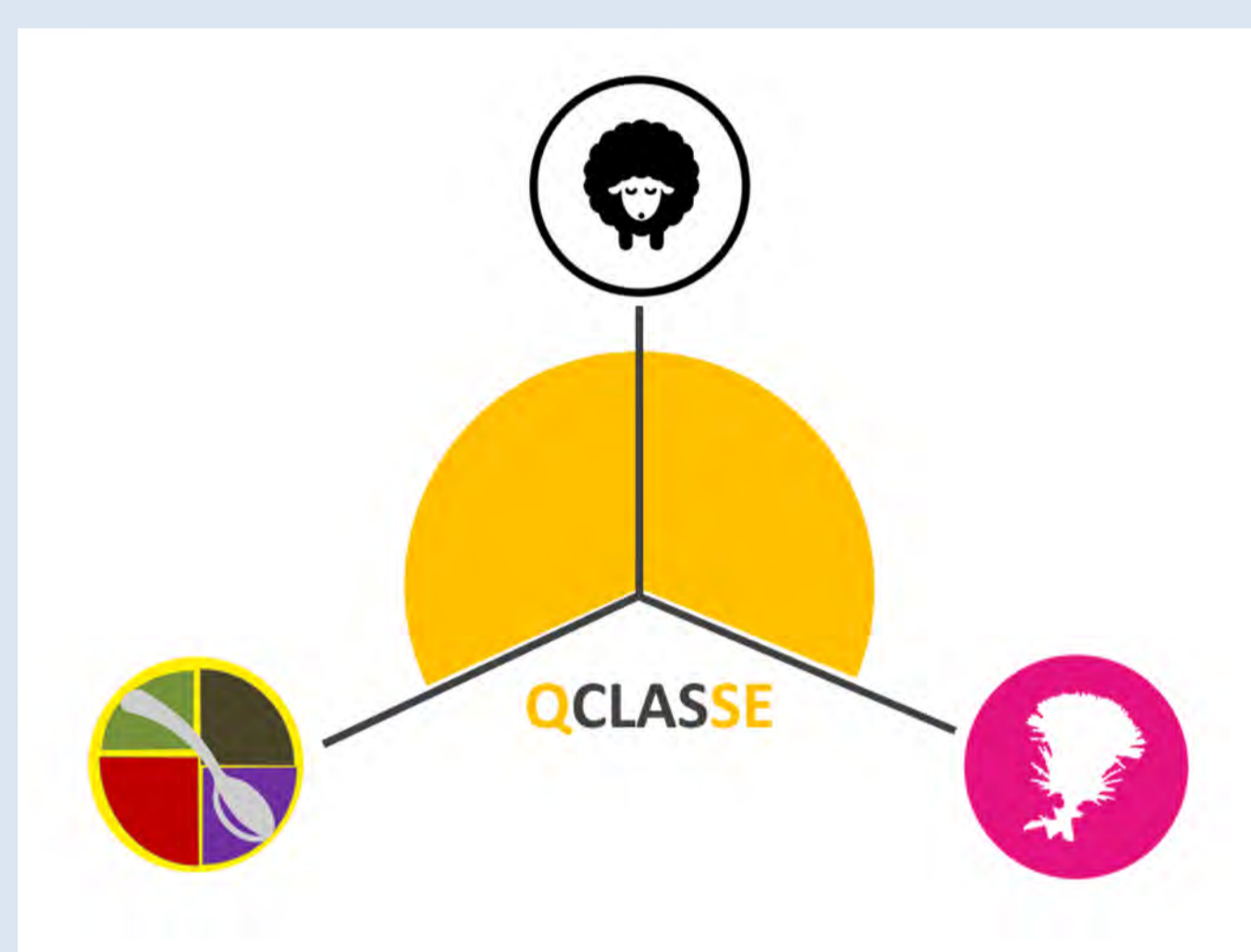


# Identifying the geographical origin of Serra da Estrela PDO cheeses using fatty acids profiles

**Introduction:** Serra da Estrela cheese (SEC) is a Portuguese traditional cheese that bears a Protected Designation of Origin label, produced in a limited geographical region, using Raw ewe milk from “Churra Mondegueira” and “Bordaleira” autochthonous breeds; Wild thistle flower (*Cynara cardunculus* L.) and Salt.

**Materials and Methods:** 24 SEC produced between November 2017 and March 2018, with approximately 45 days of maturation in 6 different producers were collected at selected certified producers and analysed by gas-chromatography (GC).



**Fig.1.** LDA-SA discrimination of Serra da Estrela PDO cheeses by geographical origin.

**Conclusions:** The results showed that, although a similar FA profile (23 individual fatty acids identified, being the most abundant ones: C4:0, C6:0, C8:0, C10:0, C12:0, C14:0, C16:0, C18:0, C18:1n9c, C18:2n6t, C18:2n6c and C18:3n3) could be established for all cheeses, regardless the producer, geographical origin and production date, **the overall profile could be used for discriminating the cheeses according to their geographical origin** (5 municipalities within the PDO region).

A linear discriminant analysis (LDA) with the simulated annealing (SA) algorithm enabled establishing a classification model that was able to correctly classify 96% of the original grouped samples (Fig.1) and had a predictive sensitivity of 88% (leave-one-out cross-validation).

So, FA profile could be used as a **geographical origin authentication tool**, providing the consumer a guarantee regarding this high-value and appreciated food