

CYNARA CARDUNCULUS L. FLOWERS AND THE CARDOSINS VARIABILITY: A PROBLEM OR AN OPPORTUNITY?

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- Use of cardoon in the manufacture of sheep and goat cheese – DOP cheese



- Cynara Cardunculus L.* is a great coagulating agent.
- Cynara Cardunculus L.* Variability



- Presence of aspartic proteases – cardosins (A-H)

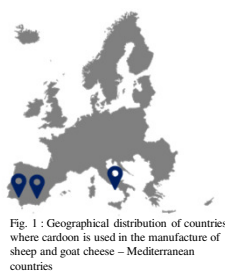


Fig. 1 : Geographical distribution of countries where cardoon is used in the manufacture of sheep and goat cheese – Mediterranean countries



Presence of Cardosin B and absence of cardosin A:
Produces cheeses with non-firm inner textures related to a low proteolytic action with K-casein, resulting in a higher non-specific proteolytic action.



Presence of Cardosin A clearly predominant, and cardosin B:
Produces cheeses with less creamy textures due to a high proteolytic action with k-casein.



Through the characterization of the cardosins profiles from flowers of individual plants, it was discovered that some plants do not possess the processed form of cardosin A.

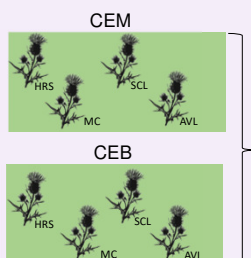
OBJECTIVE

Evaluate the variability of the enzymatic profile among *Cynara cardunculus L.* ecotypes and the variability within each ecotype (individual flowers).

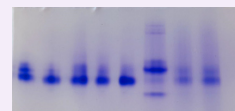
METHODOLOGY

4 ecotypes (plant origin):
HRS
MC
SCL
AVL

2 Experimental Fields:
CEB
CEM

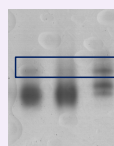


- Separation of cardosins by Native-PAGE electrophoresis analysis. (12.5% acrylamide)

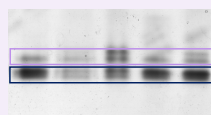


RESULTS & DISCUSSION

- Native-PAGE → Discriminate the main forms of cardosins:

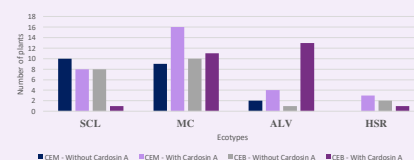


→ Unprocessed forms of cardosin A



→ Cardosin B
→ Cardosin A

- Variability in terms of the presence of cardosin A between ecotypes:



SCL ecotype showed profiles predominantly without cardosin A for both experimental fields.



■ Without Cardosin A ■ With cardosin A ■ Without Cardosin A ■ With cardosin A

CONCLUSION

- TECHNIQUE** – Native-PAGE: Allows tracing an enzymatic profile; Inexpensive and technologically less demanding technique.
- OPPORTUNITY** → Draw an enzymatic profile of *Cynara Cardunculus L.* → Good information for cheese maker.