

Effect of sodium chloride concentration on the enzymatic activity of cardoon flower (*Cynara cardunculus* L.) infusion used as a vegetable coagulant for cheesemaking



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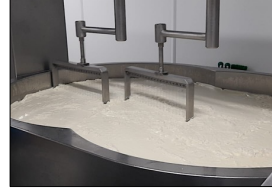
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PDO Cheeses produced with *Cynara cardunculus* L. – cardoon flower pistils in the Iberian Peninsula: Portugal and Spain.



Cynara cardunculus L. flower pistils with spontaneously growth; free flower picking.



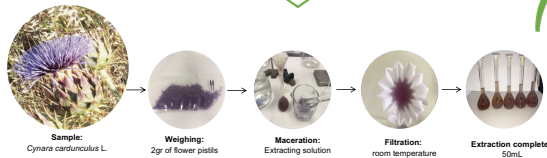
Factors that influence the mechanism of milk coagulation.

Objective

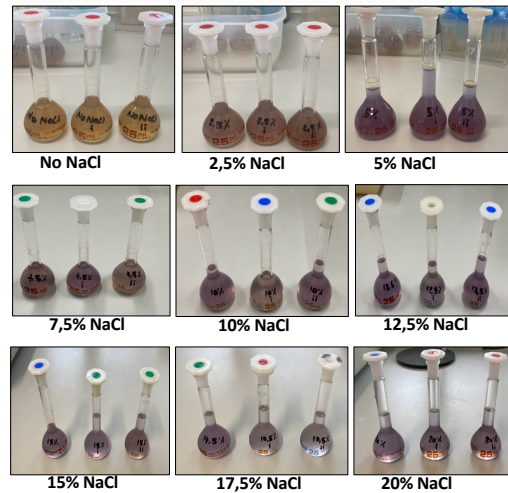
Evaluate the influence of the sodium chloride concentration (0 to 200g/L) as an extraction solution, on the enzymatic behavior of the cardoon flower infusion.

Materials and Methods

Cynara cardunculus L. traditional coagulant extract preparation



Extracts produced with different sodium chloride (NaCl) concentrations: 0 to 200 g/L



Determinations: Technological properties as a coagulant agent



Milk Clotting Activity (MCA):
(IDF 199 / ISO 23058: 2006)



Monitoring of enzymatic coagulation: Optigraph
(Alves *et al.*, 2004; Martins *et al.*, 2009)

Results

The milk clotting activity (MCA) for each of the 9 cardoon flower extracts, produced with different NaCl concentrations are showed in Fig. 1:



Fig. 1 – MCA values for the 9 extracts produced with different NaCl concentrations.

Conclusions

The results show that it is evident the influence of the concentration of sodium chloride on the enzymatic activity of the infusion. Accordingly, to the outcome obtained, it was possible to select 2 different salt concentrations for application in the cardoon flower extraction process:

- (1) At lower concentrations, **5% NaCl extracts**, we observe a positive effect on enzymatic behavior, potentially enhancing the activity of certain enzymes crucial for extraction processes. This extraction formula showed to be more suitable, both for extraction and preservation with superior technological properties. On the other hand, (2) higher concentrations of sodium chloride, **20% NaCl extracts** - exhibit an inhibitory effect on enzymatic activity, demonstrating greater losses on coagulant activity, providing a low performance concerning milk coagulation properties. Although, this extract is expected to have a lower microbial count, therefore, a better conservation along the time.

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