Study of casein aggregation into micelle in mammary epithelial cell

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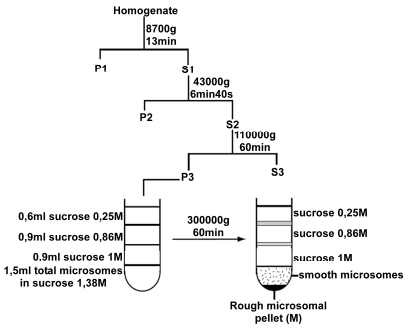
Introduction

Caseins (CN), a family of acidic phosphoproteins which represent 78% of bovine milk proteins, interact with colloïdal calcium phosphate and aggregate to organize into a supramolecular structure: the casein micelle. Despite the importance of the nutritional and functional value of casein micelle, the intrinsic organisation and the mechanisms of formation of these structures in the mammary epithelial cell (MEC) has not been fully established. The aim of this work is to obtain information about the specific arrangement of the caseins in the structure and to characterize the interactions between the various components of the micelle. The dynamic of elaboration of the micelle will be studied *in vivo*. One project is to characterize the initial micellar states formed in the endoplasmic reticulum (ER) of rat MEC.

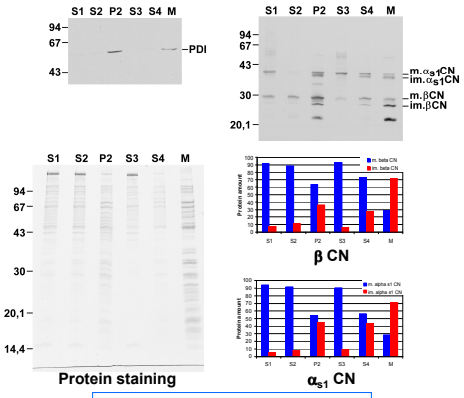
Results

Purification of rough microsomes using differential centrifugation



Paiement et al.

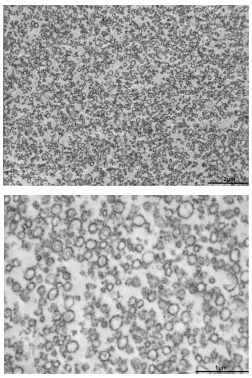
Immunobloting



Protein staining

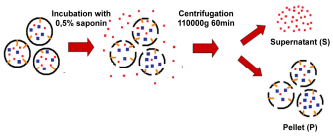
Biochemical analysis

Electron microscopy

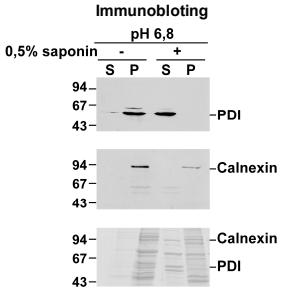


Morphological analysis

Casein aggregates in rough microsomes

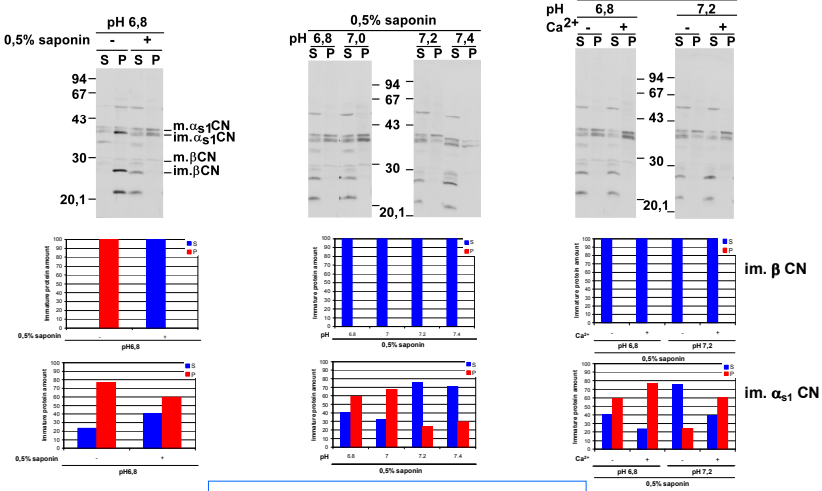


Immunobloting



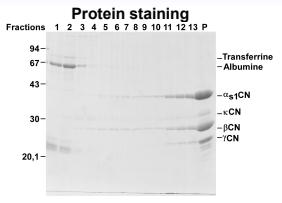
Protein staining

Distribution of ER resident proteins at pH 6,8

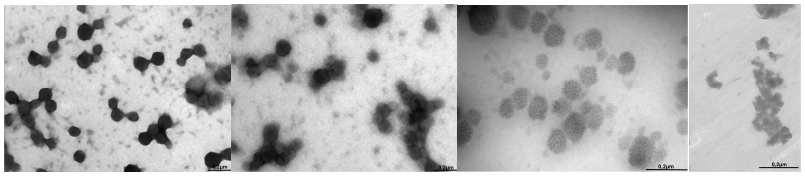


Distribution of immature caseins in various conditions

Casein micelle fractionation by density sucrose gradient

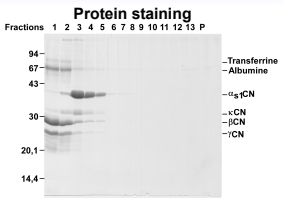


Conservative conditions



Pellet in conservative conditions | Milk in non conservative conditions | Rat milk | Milk in non conservative conditions

Electron microscopy negative staining



Non conservative conditions

Perspectives

- ✓Determine the conditions allowing the conservation of the aggregated state of the caseins
- ✓Isolate and characterize native micelles in the ER
- ✓Follow the evolution of this structure in the secretory pathway
- ✓Precise the role of calcium in the aggregation process

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