



## INFO-SHEET on TRUEFOOD main research results

### Immunological tools for proteolytic enzyme pattern determination in dairy products

Prepared by INRA, UMR1253 Science et Technologie du Lait et de l'OEuf,  
85, rue de Saint Briec, F-35042 Rennes  
INRA, Unité de Recherche en Technologie et Analyses Laitières,  
BP20089, F-39801 Poligny  
.valerie.gagnaire@rennes.inra.fr

#### **Needs / Challenges:**

In this study, we used a strategy of pre-enrichment in intracellular peptidases to be able to produce various antibodies against the peptidases from the same pool of enzymes. The strategy of pre enrichment in peptidases allowed us to produce monoclonal antibodies that react against interesting peptidases, i.e. PepN, PepC, PepX and PepQ. In this report we will present the subcloning and the amplification procedure used to purify the monoclonal antibodies reacting against PepN and PepX and the further development of ELISAs. These ELISAs were performed on various cheese aqueous extracts in order to build rapid and simple tools to evidence the presence of the peptidases from *L. helveticus* in the cheeses and their progressive and/or sequential release during ripening.

#### **Possible solutions / Improvements through research activities:**

Inhibition ELISAs were developed using monoclonal antibodies reacting against two aminopeptidases, PepN and PepX, and a protein of general stress response GroEl, used as a marker of lysis, in order to build rapid and simple tools to evidence the presence of such proteins directly in dairy products.

The test was validated for the quantification of the aminopeptidase PepN, i.e. specific to the enzyme and the lactobacilli species.

#### **Expected benefits/Impact of the results and possible uses for food producers:**

Producers benefit from enhanced product quality.

More information can be obtained by Valerie Gagnaire (INRA, France). ([valerie.gagnaire@rennes.inra.fr](mailto:valerie.gagnaire@rennes.inra.fr)).