

Protein breakdown and evaluation of peptide and aminoacid profiles of cheese during ripening

Erhan Sulejmani¹, Xhabir Abdullahi¹ and A. A. Hayaloglu²

¹Department of Food Technology and Nutrition, 1200 Tetovo, Macedonia, erhan.sulejmani@unite.edu.mk

²Department of Food Engineering, Inonu University, 44280 Malatya, Turkey

Introduction

- Beaten cheese is an authentic product to its hard consistence and exceptionally salty taste with properties which is maintained even in ordinary condition [1]
- Proteolysis is the most complex and perhaps the most important of the 3 primary biochemical events that occur during ripening
- The hydrolysis of β -CN by chymosin is strongly inhibited by 5% (wt/vol) NaCl and completely inhibited by 10%, NaCl [2-3]

Chemical methods



Chemical Composition

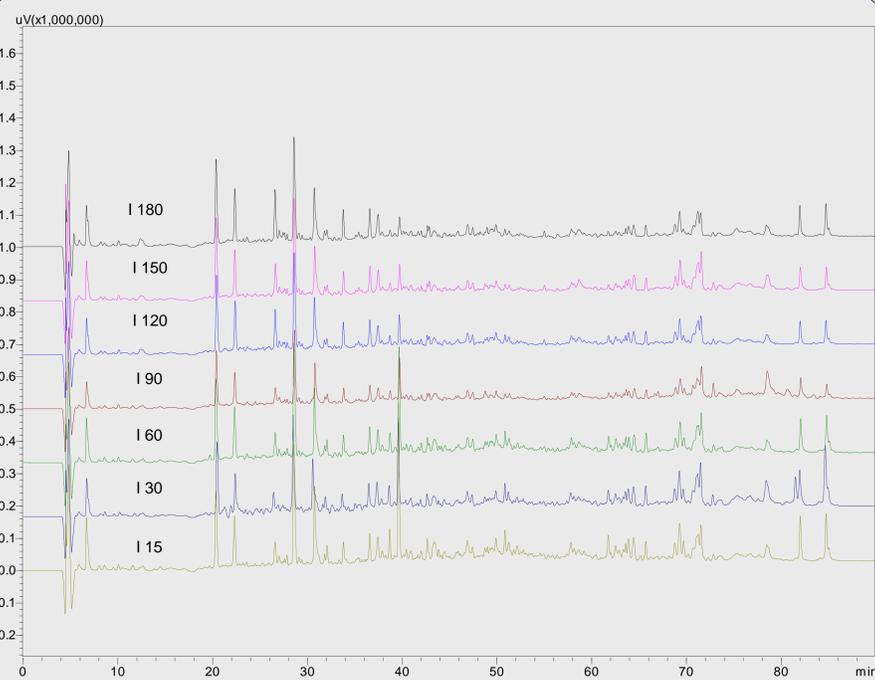
- pH
- Titratable acidity
- Moisture
- Salt
- Fat-in-dry matter
- Total protein

Proteolysis

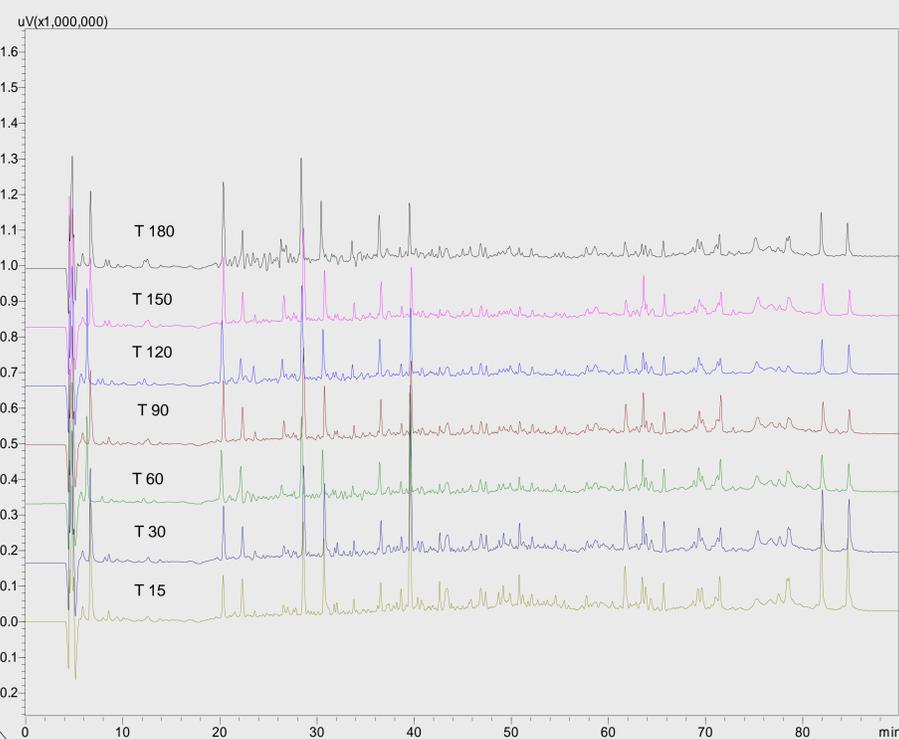
- WSN
- TCA
- TFAA
- Urea-PAGE
- Peptide profile by RP-HPLC



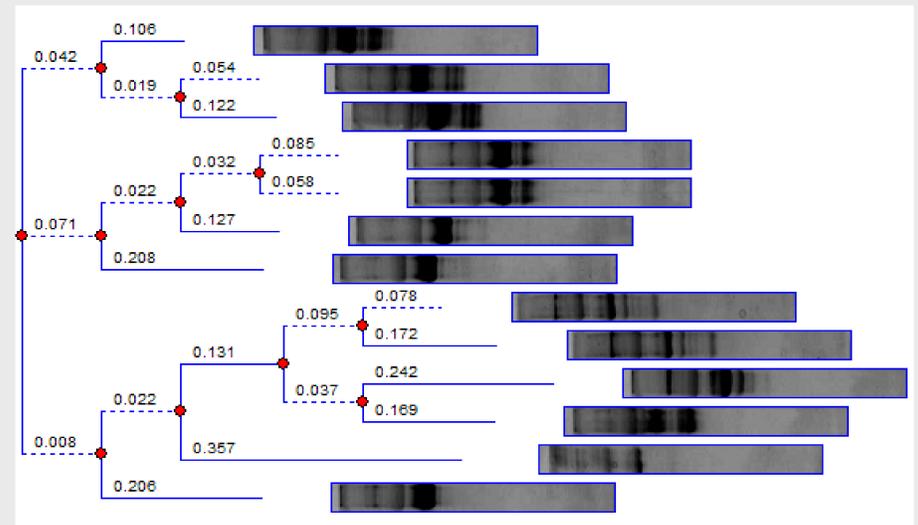
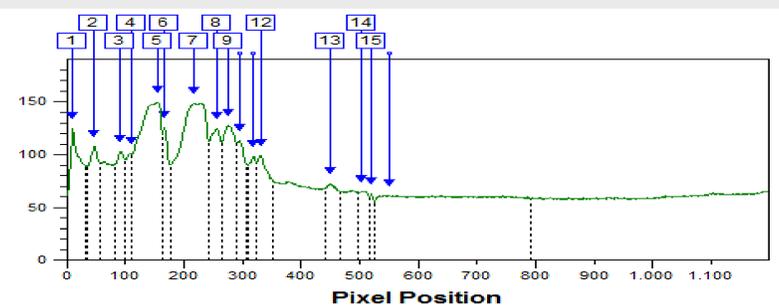
RP-HPLC peptide profile of Industrial Beaten cheese



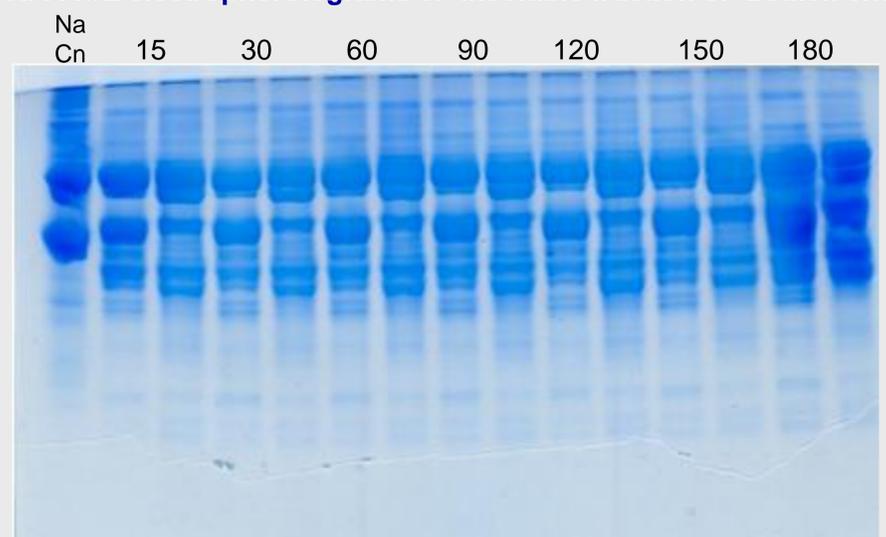
RP-HPLC peptide profile of Traditional Beaten cheese



Results of hierarchical cluster analysis of the electrophoretic bands by TotalLab



Urea-PAGE electrophoretograms of insoluble fraction of Beaten cheese



Conclusions

- **Casein breakdown:** the levels of water-soluble nitrogen, 12% trichloroacetic acid-soluble nitrogen, and total FAA were lower in traditional cheese in comparison to industrial cheese
- **Peptide profiles:**(reversed-phase HPLC) of water-soluble fractions of the cheese exhibited some differences among the cheeses, reflecting a cheese environment that affected its peptide profile

[1] E. Sulejmani, Study on the specific chemical and biochemical changes in the beaten cheese during ripening. PhD Thesis, Macedonia (2014)

[2] P. L. H. McSweeney, Biochemistry of cheese ripening: Introduction and overview. (2004) 347-360

[3] P. F. Fox, B. F. Walley. J. Dairy Res. (1971) 65-170