



Molecular and Functional Properties of Milk

Exam Question 09: Increased Protein Degradation

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Link to Git repo.: https://github.com/DanishUnicorn/fp_exam_2025



Question 09

Situation

You are the manager of a medium-sized Danish co-operative dairy plant in Northern Jutland and suspect an increased protein degradation occurring in your milk.

Your task

Map out the reasons for this and determine which methods to use to prove that this is happening.

Advice

Explain the possible reasons for protein degradation occurring in milk and which proteins are susceptible, and the consequences for this proteolysis in selected products. List the methods which you would use to determine this and what actions you would take to prevent it occurring in the dairy plant and at the farm level.

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Synopsis for Question 09

1 Introduction

Milk and dairy products are nutritionally important in the diet worldwide. The microbiological quality of raw milk is essential for the quality of the final dairy product. Quality assurance in milk production at herd level is therefore of great economic importance for both the dairy producer and the dairy industry [1].

2 Milk Composition

3 Protein Degradation

3.1 Reasons for Protein Degradation

3.2 Susceptible Proteins

4 Consequences of Proteolysis in Milk Products

5 Methods

5.1 Determining Protein Degradation

5.2 Preventing Protein Degradation

5.2.1 Dairy Plant Level

5.2.2 Farm Level

6 Conclusion

Bibliography

- [1] Maria Åkerstedt et al. “Protein degradation in bovine milk caused by *Streptococcus agalactiae*”. In: *Journal of Dairy Research* 79.3 (2012), pp. 297–303. DOI: [10.1017/S0022029912000301](https://doi.org/10.1017/S0022029912000301).