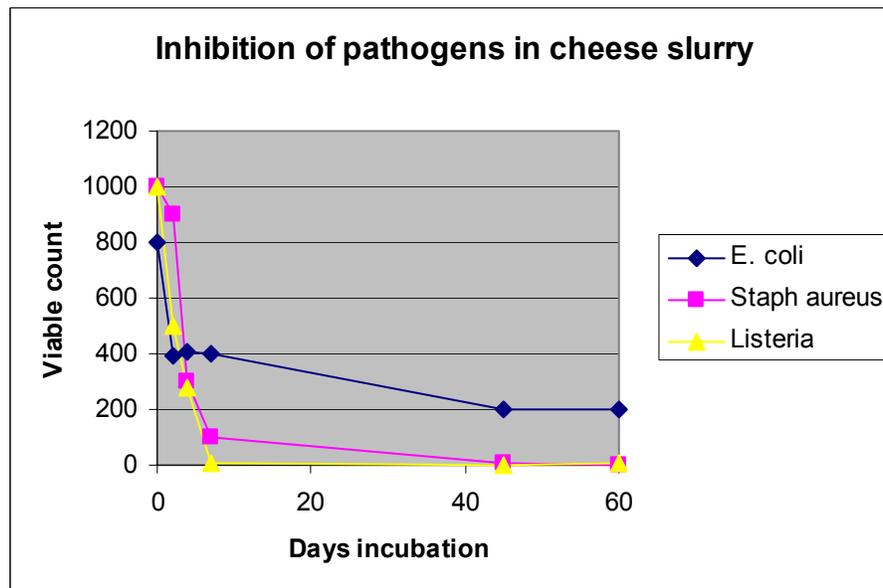


Safecheese project - Isolation of lactic acid bacteria with protective properties.

The Test: Inhibition of Pathogens

The Safecheese project set out to find naturally occurring lactic acid bacteria which could be added to milk at the beginning of cheese making to prevent the growth of food poisoning organisms such as *Staphylococcus aureus*, *Listeria monocytogenes* and *Escherichia coli* O157. To do this, 170 samples of cheese and curd were collected from European producers. The activity of the lactic acid bacteria in the cheese was assessed in the microbiology laboratory by adding the pathogenic organisms to slurries of cheese and counting the survival of the pathogens over time. The figure below shows a culture which is effective against *Staphylococcus aureus* and *Listeria*, but has weak activity against *E. coli*.



In many cases, the pathogenic organisms increased with storage, but a total of 53 samples showed some ability to prevent the growth of the pathogens or even reduce them to very low numbers.

After a more detailed examination of the promising samples, 2 protective cultures were identified which showed a strong anti-pathogen effect in milk and in cheese. The project team used specialist facilities at the University of Ås in Norway to prepare cheese from milk spiked with pathogens and the results show clearly that the protective cultures work, not only in the laboratory, but also under real cheese making conditions.



The Result: Appearance, texture & aroma unaffected from protective cultures

It is important to know that the protective cultures do not change the taste of the cheese and separate experiments have been carried out in which Camembert cheese was made with a commercial starter culture and mixture of starter culture and the new protective culture. The cheese making process was carefully monitored to check that the development of acidity was not affected by the protective culture. Careful sensory analysis of the ripened cheese was carried out by a trained panel that was unable to find any change in appearance, texture or aroma which was due to the new culture.



Next Step- Industry Trial

We are grateful to the cheese makers who provided samples in early 2007 which enabled the project to go ahead. We have details of the effect the lactic acid bacteria in each sample of cheese had on the growth of pathogens and can provide this on an individual basis upon request.

The Safecheese project is now looking for cheese makers who wish to try out a sample of the protective culture in their dairy. The trial will require the preparation of 2 batches of cheese including the protective culture and 2 "control" batches of cheese made with normal ingredients. The cheese should be made by the normal method, the only requirement being that the taste and appearance of the cheese is assessed carefully at the end of the ripening period. We anticipate that the finished cheese will be sold by the producer in the normal way. With your help, we are keen to gain experience in the application of the protective culture to soft, hard and semi-hard cheeses. Full advice on how to carry out the tests will be given to interested producers. For further details, please contact ken.johnston@pfaraday.com

Safecheese is a project sponsored by the EU under the FP6 scheme "Research for SMEs". The project runs until December 2009.



