

Food Spoilage and Safety Predictor (FSSP) software

Predicting the shelf life of seafood under different storage conditions

Mathematical models for growth, survival or inactivation of microorganisms can be valuable tools to evaluate safety and shelf life of food. However, such predictive microbiology models can be difficult to use in practice unless they are included in user-friendly application software such as the Food Spoilage and Safety Predictor (FSSP).

The Food Spoilage and Safety Predictor software contains various models to predict the effect of product characteristics and storage conditions on shelf life and safety of food. The first version of the software was launched as far back as in January 1999 and it is now widely used by more than 6,000 people/companies/institutions in 118 countries.

Latest version has new predictive models

In 2014, a new and expanded version of the software, now named the Food Spoilage and Safety Predictor (FSSP), has been launched. FSSP contains new predictive models and new facilities in addition to all the features already available as part of the former version called Seafood Spoilage and

Safety Predictor (SSSP), e.g. models to predict the effect of temperature storage conditions on product shelf life, models for growth of specific spoilage microorganisms to predict shelf life of fresh fish and models to predict food safety including histamine formation in marine finfish. New predictive models in FSSP include:

- Growth and growth boundary model for lactic acid bacteria in seafood and meat products. This new model has been extensively validated and it can be used for a wide range of seafood.
- Expanded model to predict the simultaneous growth of lactic acid bacteria and *Listeria monocytogenes* in various seafood and meat products including some mayonnaise based seafood salads.

- Product specific models for the simultaneous growth of lactic acid bacteria and *Listeria monocytogenes* in chilled cottage cheese.
- A generic growth and growth boundary model for any microorganism/food combination where cardinal growth parameter values like the minimum temperature and pH for growth have been determined. This generic model can take into account the effect of various product characteristics and storage conditions. Predictions can be obtained for constant or for dynamic temperatures, pH and lactic acid conditions.

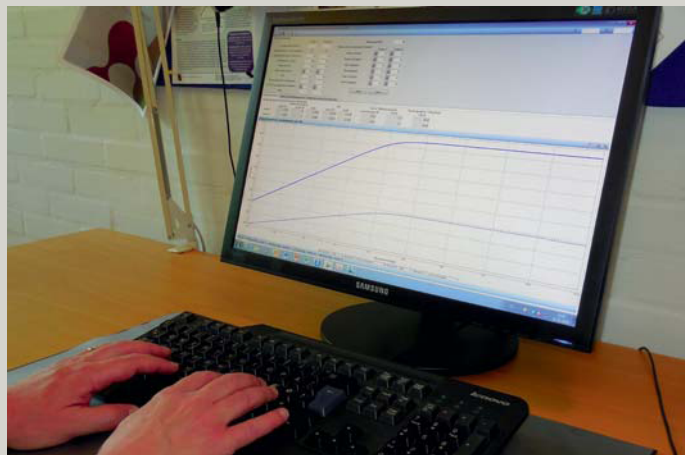
Multiple uses of this software tool

FSSP can, for example, be used to document if *Listeria monocytogenes* is able or unable to grow in a ready-to-eat seafood product. This

specific use of the software is important to comply with the EU regulation (EC 2073/2005) and it is described on the website of the Danish Veterinary and Food Administration (www.fvst.dk, in Danish). In addition, FSSP can be used to facilitate development or reformulation of especially lightly preserved foods.

FSSP is an important tool for the public sector consultancy, teaching and industry advice given by the Predictive Microbiology research group at the National Food Institute (DTU Food), Technical University of Denmark (DTU). It is freely available at <http://fssp.food.dtu.dk>. To help interested FSSP users benefit from this tool, series of one-day workshops are organised as indicated on the FSSP-homepage or on request to the author.

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The safety and shelf life of fish and seafood products can now be evaluated with a new and free software – Food Spoilage and Safety Predictor (FSSP).

Situations where the FSSP software can be deployed

- Simulate your cooling chain to estimate the number of days the supermarket can sell the product.
- Improve your cooling chain or change the recipe to estimate additional shelf life.
- If there is a cooling chain rupture you can quickly decide whether you need a product recall or can continue without compromising food safety and quality.
- Simulate the effect of new recipes and document shelf life and food safety in order to reduce the effect of microbiological product testing so the product will quickly reach the market.

