

Cell line lets tuna off the hook

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Collaboration between Flinders University and CSIRO's Australian Animal Health Laboratory has delivered the world's first continuous southern bluefin tuna (SBT) cell line.

The cells, which have been successfully grown for more than 50 generations, are now considered to be 'immortal', and will enable a range of laboratory research projects to be conducted on tuna flesh without using live fish.

Scientists at CSIRO and Flinders University, which are both major participants in the Aquafin Cooperative Research Centre, are now using the cell lines to conduct two distinct areas of research: one is attempting to extend the shelf-life of tuna; the other will look for viruses.

Flinders biological scientist Dr Kathy Schuller, said that instead of using large live fish, which is expensive and difficult, scientists can use cells grown in small plastic culture vessels.

At Flinders, the cell lines are being used to test natural antioxidants that may improve the flesh quality and extend the shelf life of SBT destined for the Japanese sashimi market. The researchers also hope that the antioxidants will help to preserve the high levels of healthy omega-3 fatty acids already present in the tuna.

Using the cell lines, Dr Schuller can now simultaneously test 24 different antioxidants or antioxidant combinations within a week.

This compares with years to do the same experiments on live fish. The research team is providing insights into the best concentrations and combinations of antioxidants to be added to SBT feeds to maximise flesh quality.

"While establishing immortal cell lines was a lengthy process, it was a pleasing and particularly useful outcome for the tuna industry. This is one of the benefits of working as part of a CRC," Dr Schuller said.

Dr Mark Crane of CSIRO's Australian Animal Health Laboratory says the laboratory could use the cells to hunt for viruses in SBT.

"The great advantage of cell lines is that we can grow viruses in the laboratory outside the host animal," he said.

"The use of tuna cell lines will greatly facilitate research to determine whether viruses are associated with tuna and if so how to manage them."

Flinders PhD student Alexandra Korte, whose project will use the cells to study tuna

biochemistry, said that producing the SBT cell lines had proved to be very time-consuming.

"But thankfully, our persistence, and a bit of serendipity, has paid off," she said.

The research is part of an Aquafin CRC project led by Dr Philip Thomas and supported by the Tuna Boat Owners Association of South Australia. The project receives funds from the tuna industry, the Australian Government's CRC program, the Fisheries R&D Corporation and other Aquafin CRC participants.

MEDIA CONTACT Kathy Schuller 08 8201 2031