

Pulsed electric field technology offers new potential for food processing

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French fries derived from a potato processed through this new Pulsed Electric Field (PEF) processing machine are healthier for people to eat. Credit: University of Otago

University of Otago researchers are demonstrating the potential of a new

technology which could see New Zealand production of a popular food – the French fry – become healthier, and less costly and wasteful.

Recently arrived pulsed [electric field](#) (PEF) processing equipment will be put to test for large scale French fry production over the next three months.

This technology, which uses brief pulses of electricity (microseconds) to modify and disrupt the membranes of cells in plant or animal material or microorganisms, has a wide variety of applications across many [food](#) processing industries.

The electric field being pulsed through un-cut potatoes during processing alters their microstructure, which results in a more controlled release of sugar, more uniform colouration and reduced oil uptake. It also enhances processing as the softer texture makes the potatoes easier to cut, meaning there is less waste, the ability to develop new shapes (e.g. lattice cut) and increased knife durability (up to 60 per cent).

As pulsed electric field processing affects the cell membrane it can be used to enhance the extraction of pigments or bioactive compounds from food, increasing their yield and quality or to kill micro-organisms as alternative to the pasteurisation of bulk liquids, such as fruit juices and milk.

The [industry](#) pilot programme is part of a Ministry for Business and Innovation funded Food Industry Enabling Technology (FIET) programme worth nearly NZ\$16.8M, over a six-year period (2015-2021). There are six institutions involved in the programme: Massey University (host), the University of Otago, the University of Auckland, Plant & Food Research, AgResearch and the Riddet Institute. The University of Otago leads the research and industry implementation of PEF [technology](#).

"With the equipment now in New Zealand we are excited to begin the industrial trial with the hope of proving the techniques, and in time enabling New Zealand food industries to benefit from this [new technology](#)," says University of Otago Professor Indrawati Oey, Head of Otago's Department of Food Science and the PEF project leader.

"PEF also has potential to enhance the quality and value of many other NZ agricultural and horticultural products," adds Professor Oey.

Provided by University of Otago

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