

# Plan to sell 50m meals made from electricity, water and air

Solar Foods hopes wheat flour-like product will hit target in supermarkets within two years

Daniel Boffey in Helsinki

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Solar Foods' protein-heavy substance can be added to dishes and food products as an ingredient. Photograph: Solar Foods

A Finnish company that makes food from electricity, water and air has said it plans to have 50m meals' worth of its product sold in supermarkets within two years.

Solar Foods is also working with the European Space Agency to supply astronauts on a mission to Mars after **devising a method** it says creates a protein-heavy product that looks and tastes like wheat flour at a cost of €5 (£4.50) per kilo.

The Helsinki-based company, assisted by research from the VTT Technical Research Centre of Finland and the Lappeenranta University of Technology, will apply to the EU for a **novel food licence** later this year before starting commercial production in 2021.

The powder known as Solein can be given texture through 3D printing, or added to dishes and food products as an ingredient.

It is produced through a process similar to brewing beer. Living microbes are put in liquid and fed with carbon dioxide and hydrogen bubbles, which have been released from water through the application of electricity. The microbes create protein, which is then dried to make the powder.

Dr Pasi Vainikka, the chief executive of the tech startup, said the company had produced a carbon-neutral way to produce a fully natural protein source without wasting land or water. Pre-engineering on a full-scale factory had just started, he added.

“It is a completely new kind of food, a new kind of protein, different to all the food on the market today in how it is produced as it does not need agriculture or aquaculture,” he said.

The foodstuff was said to mark a break with a thousand years of production. “If we go back in time in the gatherer societies we have just been using more of the same, plants and animals,” he said.

Vainikka said he did not expect his product, which he described as the world's most environmentally friendly protein, to challenge farmers in the next two decades but that it was a “new harvest for the people”. Three-quarters of the world's calories originate from 12 plant and five animal species.

One quarter of the world's carbon footprint is due to food production but the UN has said there needs to be an increase in food of 50-70% by the middle of the century.

Half of the world's habitable land is used for farming and scientists claim the peak catch for

the fishing industry, in terms of efficiency, was 20 years ago.

Vainikka said the powder could be an “ingredient like any ingredient in the food” or it would be possible to “make the powder into fibres that resemble meat or bread”.