



AI Chef Machine for Personalized Food Production

The new AI Chef Machine platform with 3D printing will facilitate the reduction in food loss by converting unused food into powdered and granular food, which can subsequently be turned into appealing food for consumption. We will realize the creation of the AI chef machine industry as a new food supply industry that provides personalized food tailored to individual preferences and health conditions.

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Development of innovative food solutions for simultaneous food loss reduction and QoL improvement

Keywords: food loss reduction and QoL improvement, digital food ingredients, 3D food printing, dynamic evaluation of taste, texture and aroma, food/deliciousness integrated database, personalized food, AI chef machine

Background

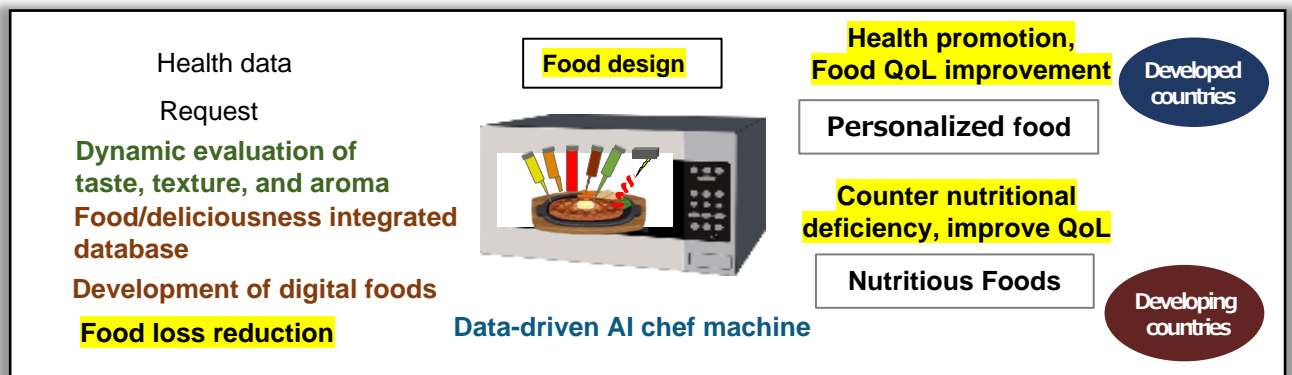
Need to utilize edible food that has been disposed

To achieve the development of a sustainable food supply industry on a global scale by 2050, it is necessary to construct a rational consumption system for food supplies by utilizing food materials that have been thrown away even though they are edible. This is important to ensure that approximately 10 billion people, an increase of 2 billion over current population level, have access to sufficient food.

Research Contents

AI chef machine to deliver delicious, healthy personalized food

In this project, we will develop a novel personalized food production system to reduce food loss and improve QoL. Specifically, we will develop digital food powders and granules using controlled structures derived primarily from unused food materials; develop dynamic evaluation technology to pattern food characteristics such as taste, texture, and aroma during eating; and construct an integrated deliciousness database. Furthermore, we aim to develop novel 3D printing technology to create various textures and flavors while utilizing the processing characteristics of digital food materials. In addition, we will develop a data-driven 3D food printing system that can provide food according to individual health and preferences, which will be achieved by digitizing all "food," including unused ingredients, texture, and flavor, and reconstructing it into printed food using an AI chef machine that integrates 3D food printing and AI. Our goal is to create a data-driven food delivery system that can provide food according to the health and preferences of each individual. The challenge is to build a novel platform using an AI chef machine that can satisfy the desire for flavor according to individual tastes and physical condition, while also incorporating health management. An AI chef machine is a 3D food printing system that integrates AI and is based on a food deliciousness database. We will build a platform that can provide personalized food according to the deliciousness database and linked to the health data of individuals, among other parameters, which will be disseminated to the world as "new Japanese food," thereby aiming to reduce food loss and improve people's QoL.



Targets by 2030

By 2030, we aim to complete the development of the prototype of a 3D food printing system (AI chef machine) that will produce personalized food with both flavor and health functions tailored to individual preferences and health conditions, made with surplus food materials.

Cooperating Research Institutes

Univ Tsukuba / National Agriculture and Food Research Organization / Yamagata Univ / Miyagi Univ / Tokyo Univ of Marine Science and Technology / Hokkaido Univ / The Univ of Tokyo / Shinshu Univ / Kyushu Univ / National Institute of Advanced Industrial Science and Technology / National Institute of Biomedical Innovation and Health Sciences / Osaka Univ / Tokyo Denki Univ / Keio Univ



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