

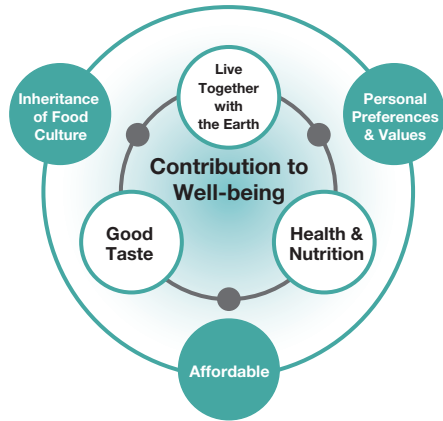


Green

## "AminoScience" that leads the "with Earth" Era

Under the circumstances of food shortages due to climate change and population growth, we aim to contribute to the spread of "with Earth" food and the promotion of carbon recycling by leveraging the strengths of "AminoScience," and to update the standard for a new type of food that will allow us to "Live together with the Earth" into the future.





**Great Taste, Green Future.**  
 “with Earth” Food Initiative

**A new type for food,  
 “with Earth” food  
 Great Taste, Green Future.**

The Ajinomoto Group does not want people to endure the pleasure of eating, while taking proper care of the environment and their bodies. That is why “with Earth” food, the new type of food we are aiming for, is sustainable, good-tasting, and healthy. While respecting local food culture, we will respond to the diversifying tastes, values, and lifestyles of consumers, and propose a new type of food that people can use in their daily lives by designing not only substitutes, but also the taste, nutrition, and texture of the ingredients themselves.

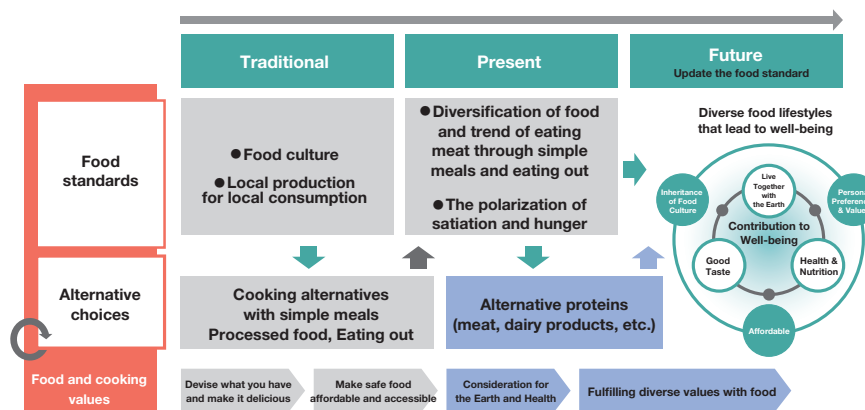


# 1. What is the new food standard?

The world is home to diverse food cultures rooted in rich climates, people's spirituality, and history. In recent years, economic growth has led to the development of various food-related industries, which, combined with the advancement of women in society, has led to the expansion of convenient options that support shorter cooking times and alternatives. People have updated their food standard (daily food) by wisely incorporating them into their daily lives. Today, the issue of global sustainability is becoming more serious. As the world's population grows, the amount of

food and energy required is also increasing, and environmental considerations are becoming essential for the sustainability of human society. The plant-based food market has expanded to a scale approaching ¥500 billion, mainly in Europe and the United States, but is currently stagnant or shrinking due to issues related to taste and nutrition in spite of high prices. The Ajinomoto Group is leveraging "AminoScience" to solve these issues and provide "with Earth" foods that are tastier and healthier, updating the food standard for the future.

**We will create a new food standard that balances good-taste, health & nutrition, and live together with the earth.**



# 2. The spread of "with Earth" food

In order to achieve carbon neutrality (or negativity) in the future and meet the need for protein brought about by the increasing human population, it is important to wisely incorporate plant-based foods and other environmentally friendly ingredients and foods into our daily diet.

The Ajinomoto Group has "AminoScience" as its strength to efficiently produce large quantities of environmentally friendly food ingredients and deliver them to consumers as more delicious and healthier foods. There are three areas where "AminoScience" can be utilized. The first is plant-based foods or plant-derived proteins. To address the lack of taste, texture, and nutritional value that has been an issue with conventional plant-based foods, we will promote the provision of "Plant-Based with Nutrition," which designs optimal nutritional balance including protein for each application by utilizing our Deliciousness Technologies and Nutrition Design Technology. As part of that, we are

strengthening our "Plant Answer®" model, which provides optimal solutions for each customer in our B2B business. As an example, we have invested in DAIZ Inc., a startup company that develops and manufactures "Miracle Meat" derived from sprouted soybeans, offering a solution using our Deliciousness Technologies. As a new challenge, "2Protein" (powder type and tablet), a plant-based protein for which we supported product development, was launched in July 2023 as a new product by Japanese startup company TWO Inc. Leveraging "AminoScience," this product contains the ideal balance of essential amino acids needed to support body building through training. The regrowth of the market for plant-based foods is vital to the spread of "with Earth" food, and the Ajinomoto Group will promote active investment and cooperation through B2B and B2C businesses. The second area is cultured meat. In this area we make extensive use of the cutting-edge research that the

Ajinomoto Group has pursued in the medical field at its Research Institute for Bioscience & Fine Chemicals. We are engaged in joint research into meat culturing technologies with Super Meat, an Israeli company in which we have invested. In addition, we will contribute to sustainability and protein crisis countermeasures in cooperation with related ministries and agencies by sponsoring the Cellular Agriculture Research Institute for the purpose of acquiring a license and commercialization in Japan. The third area is the use of microbial protein “Solein®,” which uses CO<sub>2</sub> as a source of nutrients. Ajinomoto has entered into a strategic alliance with Solar Foods, a Finnish food tech company, to develop products using Solein® developed by Solar Foods, and will begin marketability testing in Singapore in 2024.

The Ajinomoto Group’s “AminoScience” has garnered attention from startups around the world, and we have received offers of cooperation from many businesses.

### What are alternative proteins?

#### Plant-based food

A generic term for foods made using plant-derived ingredients as substitutes for animal protein. Such as soy meat instead of meat or oats milk instead of cow’s milk.

#### Cultured meat

Meat made by placing cells extracted from animals into a culturing medium containing amino acids and other nutrients for culturing. Cultured meat also has low GHG emissions.

#### “Solein®”, microbial protein

Developed by Solar Foods. Protein with a similar amino acid makeup to meat, created in a unique bioprocess that supplies CO<sub>2</sub>, hydrogen, oxygen, and small amounts of nutrients to microorganisms.

## 3. Promoting carbon neutrality

Rearing livestock for meat requires a great deal of water and land for raising livestock and growing their feed, and consequently involves huge volumes of GHGs. If the livestock industry continues to expand in response to the growing world population and the normalization of meat-eating in developing countries, it will place a large burden on the global environment.

As the following table shows, GHG emissions from plant-based food are about one-tenth those of conventional meat. The manufacture of plant-based food, cultured meat, and microbial proteins also requires far less water and land.

The “with Earth” food initiative will help resolve future food crises and help coexistence with the Earth, and is the area in which the Ajinomoto Group is concentrating on most as a growth area of the Geen area. Additionally, the Ajinomoto Group has set a goal of achieving net zero greenhouse gas emissions by 2050 and hopes to contribute to the construction of a sustainable food system. In April 2023, the Group concluded a joint research and development agreement with Logomix Inc., a biology-oriented start-up company possessing the technology for large-scale genome construction. The Group intends to combine its amino acid fermentation techniques and expertise with this technology to promote the development of sustainable amino acid production methods that will reduce the impact that the

fermentation process places on the environment through factors such as CO<sub>2</sub> emissions, seeking to produce green amino acids through innovation in the amino acid production biocycle. The ability to contribute to the well-being of humanity and the Earth through the action of amino acids is a significant strength of the Ajinomoto Group.

We believe that the Ajinomoto Group’s “AminoScience” will lead the “with Earth” era.

### Alternative proteins have a low environmental impact!

Ingredients		Conventional (Beef)	Plant-based food	Cultured meat	Microbial proteins
	Environmental impact				
	GHG emissions	100	11	2.4	0.5
	Water usage	100	13	21	0.2
	Land area usage	100	4.0	5.1	0.5

Comparison of environmental impacts of conventional livestock meat and plant-based foods, cultured meat and microbial proteins. The environmental impact of cultured meat and microbial proteins with new technologies are overwhelmingly small, and carbon negative can also be achievable.