NH Foods
Unleash new potentials for protein

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NEWS RELEASE

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To: Media Representatives

Unleash new potentials for protein

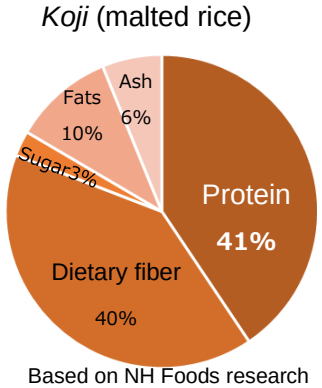
New research project targeting the development of production and processing technology for *koji* as a new source of protein by 2024

NH Foods Ltd. (headquartered in Kita-ku, Osaka; headed by Nobuhisa Ikawa, President and Representative Director) will commence a research and development project relating to cellular foods (cultured meat) and algae. The project will also focus on *koji* (malted rice). NH Foods believes that this initiative will contribute to the stable procurement and supply of proteins, which is one of its Five Materialities (key issues). In 2024, we also aim to start trial marketing of newly developed products with *koji* as a protein-rich ingredient.

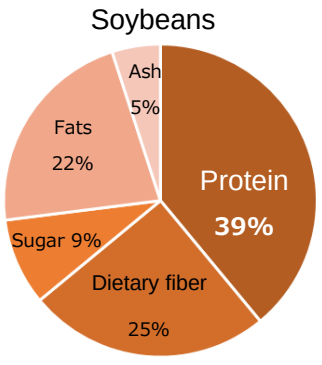
Focus on *Koji* as a New Source of Protein

Koji is a familiar part of the Japanese diet and has long been used in the production of traditional fermented products, such as miso, soy sauce, and sake. Like soybeans, which are known as “meat from plants,” it offers excellent nutritional value, including high levels of protein and dietary fiber. Foods containing *koji* are also generally believed to offer health benefits, especially the maintenance of a healthy intestinal environment and stimulation of the immune system. NH Foods has decided to explore the potential of *koji* as a future source of proteins and a possible solution to future protein shortages.

figure



Based on NH Foods research
Using dried *Koji*



Standard Tables of Food Composition In Japan - 2020 - (Eighth Revised Version)
Calculated using whole dry yellow soybeans grown in Japan

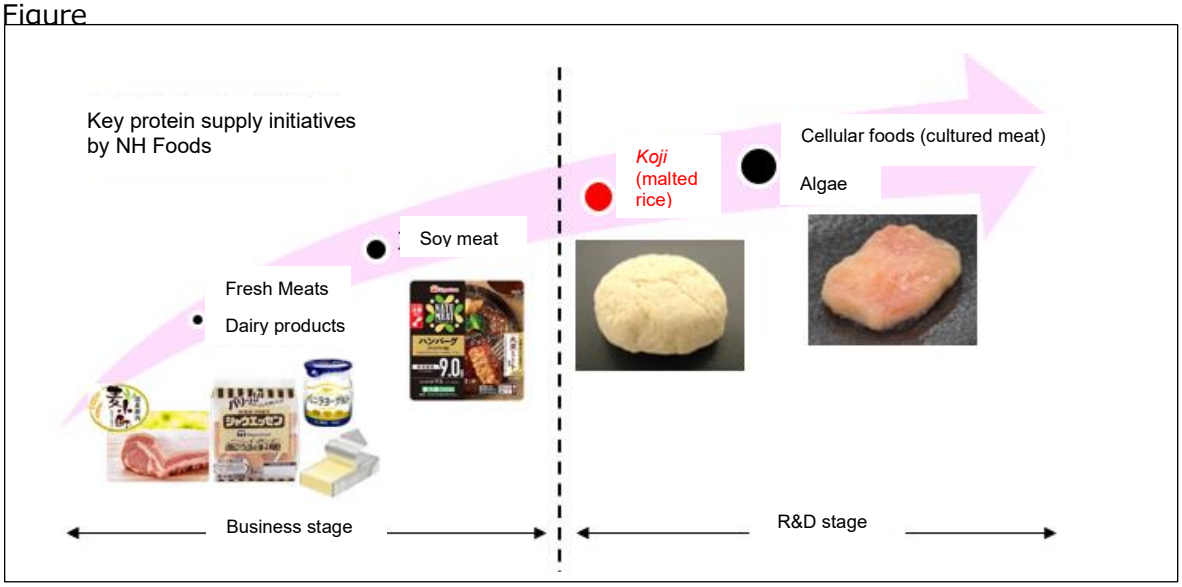
Koji is generally made by adding a *koji* culture (Aspergillus oryzae) to steamed grains, such as rice, wheat, or soybeans, and then keeping the mixture at temperature and humidity levels that encourage culture growth. NH Foods is exploring a more efficient method for culturing Aspergillus oryzae in isolation, using a culture medium made from food ingredients. The *koji* will be produced in a sealed environment, which will protect the culture from the effects of climate and weather fluctuations. This approach is seen as a more stable and sustainable way to harvest protein, compared with traditional protein sources, such as meat, fish, and soybeans.

Background to this Initiative—Protein Research by NH Foods

An expanding world population and declining food industry productivity due to global warming have raised fears of future shortages of food and proteins. There is also a need to develop more sustainable protein production and procurement methods. These factors are expected to drive continuing growth in the market for alternative proteins*1.

Proteins are the Bounty of Nature. Throughout its history, NH Foods has supplied proteins primarily in the form of fresh meat. While continuing to base our business primarily on traditional livestock products, we will also work to ensure reliable supplies of protein for the future. One of the goals identified in NH Foods Group Vision2030 is to “Unleash new potentials for protein” by taking up the challenge of creating new types of proteins. Initiatives toward this goal include the development of the *NatuMeat* series of soy-based protein products, research and development focusing on cellular foods (cultured meat)*2, and participation in an algae utilization project*3.

Figure



*1 The world market for alternative proteins was estimated at ¥486.1 billion (shipments basis) in 2021 and is expected to increase eight-fold to ¥3,311.3 billion by 2030. (Source: Yano Research Institute Ltd., *Global Alternative Protein Market: Key Research Findings 2022*)

*2 R&D relating to cellular foods (cultured meat): Cellular foods are produced by culturing animal cells. Seen as a solution to environmental issues relating to conventional livestock farming, this food production method is expected to become a major source of animal protein. NH Foods has been engaged in cellular food R&D since 2019.
As a result of our research, we have succeeded in culturing bovine and chicken cells using a food-based medium to supply the nutritional elements required for cell culturing instead of the animal-derived medium (blood serum) used in the past. As a result, we are now able to use cheap and readily available food products in place of blood serum, which made up a major part of the cost of the culture medium. (https://www.nipponham.co.jp/news/2022/20221004/ (Japanese only))

*3 Participation in algae utilization project: NH Foods has joined the Matsuri Project, an initiative to create a carbon neutral society by using algae, which grow by absorbing carbon dioxide, as the basis for new industries. The Matsuri Project has been selected as a recipient of support from the Japanese government’s Green Innovation Fund. (https://www.nipponham.co.jp/news/2023/20230327/ (Japanese only))