



# Food and Health: Creating New Value

Japan is currently facing concerns regarding shrinking consumer markets as the population declines.

Meanwhile, changes such as the diversification of consumer needs and the personalization of food and medical care are expected to progress ever faster.

Further, we must consider methods of responding to risks associated with unidentified infectious diseases such as COVID-19.

## Addressing Problems of Drug-resistant Bacteria

### Antibiotic-free Chicken

<https://www.nichireifresh.co.jp/product/livestock/detail/?id=376>  
(Japanese only)

Chemical agents, such as antibiotics and synthetic antibacterials, are used in general broiler chicken farming to treat diseases, prevent the spread of illnesses due to farming conducted in tight spaces, and generate growth.

Nichirei Fresh Inc. has been selling antibiotic-free chicken since 2004. While vaccinated, our poultry is not exposed to chemical agents, including antibiotics and synthetic antibacterials, that could generate antibiotic-resistant bacteria.\* Instead, our poultry farming methods take full advantage of the innate immunocompetence of chickens.

Our farming technology takes into consideration the rearing environment and also applies its own expertise to poultry farming, thereby raising the natural immunocompetence of chickens and developing their natural resistance to diseases through the use of such substances as lactic acid, other probiotics, and plant-based herbal medicines that help maintain the health of chickens and boost their immunity.

Since the manure of chickens exposed to antibiotics affects soil bacteria and groundwater, the poultry farming methods used to produce antibiotic-free chicken also contribute to the natural cycles intrinsic to ecosystems.

### Reliable Management System: Inspections to Ensure Use of Antibiotic-free Chicken

Nichirei Fresh is performing its own inspections to ensure that poultry is antibiotic free. These inspections roughly break down into verification of production processes and product inspections.

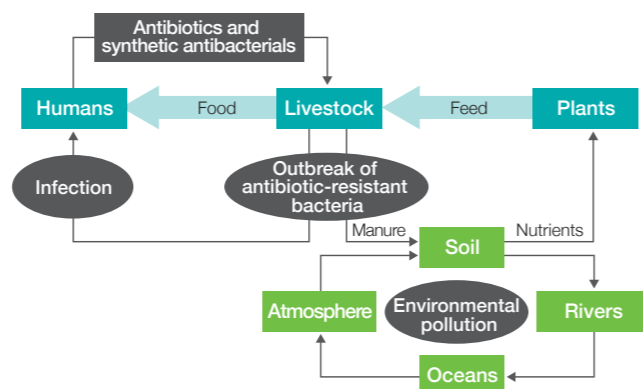
Personnel responsible for the inspections regularly visit production areas to verify that all production processes (from those in feed mills to those in breeding farms and processing factories) are being performed to the Company's standards.

In addition, the Nichirei Quality Assurance Division's Food Safety Research Center performs product inspections involving testing for antibiotic residue in special feed used in the production of antibiotic-free chicken and in final chicken products.

Nichirei Fresh ensures that quality control is adequate by inspecting all its processes, from the animal feed it uses to final product shipments.

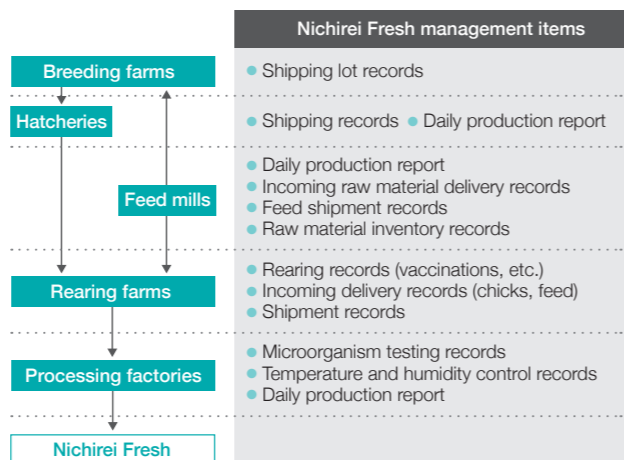


Antibiotic-resistant Bacteria That Threaten Ecosystem Cycles



\* Drug-resistant bacteria: Protecting people from drug-resistant bacteria (not affected by antibacterial agents) is becoming an issue worldwide. Those with weakened immunocompetence who are exposed to such bacteria may not respond to treatment with antibiotics.  
Drug-resistant bacteria have been found in livestock continuously exposed to chemical agents such as antibiotics and synthetic antibacterials. As a result of growing consumer interest in the United States, meat from animals not exposed to antibiotics is becoming increasingly popular.  
We will continue to assess the issue of drug-resistant bacteria as we produce chicken that helps maintain human health.

### Quality Control: Antibiotic-free Chicken



## Health Initiatives

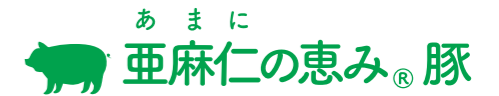
### Meat Production: Focus on Omega-3 Fatty Acids Amani-no-Megumi Meat

<http://www.goodbalancemeat.jp/>  
(Japanese only)

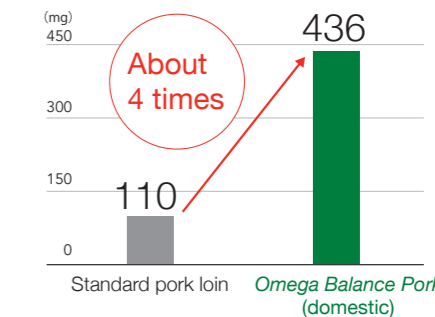
Nichirei Fresh produces and sells meat with a focus on omega-3 fatty acids, which are essential for human health. We have improved the balance of omega-3 and omega-6 fatty acids by giving chickens, pigs and cattle\* a formula feed that uses ingredients derived from flax, which is rich in α-linolenic acid. As a result, we have developed tender meat that we have been selling since 2006.

Omega-3 fatty acids, abundant in blue-backed fish, flaxseed oil and wild sesame oil, are converted into eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in the body. However, the diet of today's Japanese is often lacking in the essential fatty acids that cannot be made in the body, especially omega-3 fatty acids. Thus, Nichirei Fresh is helping support the health of its customers through the meat that appears frequently in everyday meal settings.

\* There are individual differences.



Comparison of amount of omega-3 fatty acid (α-linolenic acid) that body can absorb from 100g pork loin



Source: Nichirei Fresh

## Food Shortage Response Initiatives

### Joint Research and Development Associated with Germinated Soybeans

[https://www.nichireifoods.co.jp/news/2020/info\\_id8335/](https://www.nichireifoods.co.jp/news/2020/info_id8335/)  
(Japanese only)

Recently, the search for alternatives to animal proteins has been receiving a large amount of attention due to a variety of factors, including the increasing world population, food issues caused by more frequent patterns of inclement weather, the need for measures to reduce environmental impact through better food production efficiency, and higher awareness regarding food diversity and health. In January 2020, Nichirei Foods invested in DAIZ Inc., a frontrunner in the search for alternative proteins that is conducting advanced research regarding soybeans.

The germinated soybeans that DAIZ Inc. owns and researches are delicious and nutritious and have the potential to resolve existing issues related to vegetable proteins, including peculiar flavors and unsatisfactory textures. Moving forward, we will conduct joint research and development aimed at creating new value along with DAIZ Inc.

## Provision of In-Vitro Diagnostics for Personalized Cancer Therapies

### Companion Diagnostics

<https://www.nichirei.co.jp/news/2018/321.html>  
(Japanese only)

In 2014, Nichirei Biosciences became the first company to get an approval of manufacturing and marketing of "Companion Diagnostics", which can enable cancer patients to receive an appropriate therapy or drug depending on one's constitution and pathology, in Japan.

We contribute advancement of personalized medicine, which can enable patients to receive more effective therapies or drugs with fewer side effects, by using our accumulated immune-related technologies.



Histofine ALK IAEP® Kit

## Topic

### Japan's "conomeal kitchen" app

<https://www.nichirei.co.jp/news/2020/357.html>  
(Japanese only)

Many people are feeling stressed by having to plan meals and eat at home. With the spread of COVID-19 expected to bring an increase in opportunities for bulk food purchases, the Nichirei Group has recently developed an app—called the "conomeal kitchen" in Japanese—that suggests meal menus and preparation procedures to suit a variety of individual tastes. We believe that the eating habits of consumers will be enriched if they are able to quickly set the dinner table with dishes that match their personal preferences.

