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Views and Opinions of Japan's Fisheries Industry

Effects of full use of fish

Full utilization of fish is essential to achieve zero emission

Mr. Yoshinori Ito, Tuna Advanced Functional Food Co., Ltd. in Shimizu, Shizuoka, Japan, has recently contributed his study on the utilization of fish waste materials to the symposium on the "effective utilization of fisheries resources." What follows is an abstract of his paper.

Today, the sustainable and effective utilization of fisheries resources are essential, and realization is required worldwide. For this purpose, it is very important to manage strict control of fish biomass and perform 100% usage of fish resources more effectively to add further value. Furthermore, the publicity works to enlighten the people of these activities' necessary importance. Numerous results of contents and functional effects of fish products by so many scientific studies and investigations shows clearly that utilization of fish resource shall contribute to humanity to maintain health and happiness. It is not only delicious but also useful to raise the Quality of Life (QOL).

In Japan, there are many accumulations of the fruits of studies as the word "Functional Food' was born in Japan indicates.(Note 1) However further developing of these studies are needed in time, especially this century, the many fish resources are running short causing increase of many species in danger of extinction. The utilization of guts, bones and skins, ordinarily considered waste, converted to high-tech functional foods, signify that we can use these natural resources more effectively, resulting in more valuable product, with less amount of stock.

Those who successfully develop this business will survive this century of environment; otherwise, the fishery industry itself shall be disappeared.

Currently the following functional components are well known as the products from these fish wastes.

DHA combined phospholipids (from skin and meal of squid)

Anti-inflammatory peptideglycan (from ink sac of squids)

DNA (from salmon testis)

Chondroitin Sulfate (from salmon head, shark cartilage)

Type ‡U collagen (from salmon head)

Placenta like components (from salmon ovarian membrane)

Chitin, Chitosan and N Acetyl glucosamine (from shrimp and crab shell)

Anserine (from skipjack wastes)

Elastin (from heart of skipjack and tuna)

Collagen (from fish scale and skin)

Proteoglycan (from salmon head)

Glycogen (from oyster, shellfish)

Seasoning (from fish wastes)

The tuna occupies the summit of the food chain in the ocean. It signifies she is the top of bioconcentration and biomagnifications. Therefore, she is concentrating every functional component of the fishes and planktons in the ocean, otherwise very hard to understand her longevity and stamina for swim so long distance and high speed, also high coefficient number to increase her weight - to increase 1kg of body weight she needs about 20kgs of food. Thus, I studied the contents in their waste parts and discovered incredibly high concentration of functional components by newly developed extraction method2?and was able to conserve natural contents of tuna with no loss and made products as functional foods.

1. Tuna Oil

I had extracted tuna oil from tuna head by Hybrid Extraction Method, which I invented, in closed circuit under low temperature. At first decompressing then pressurizing and heating in a container without contacting the air until finishing the extraction process. These tuna oil were very stable for the oxidation, in spite of the abundance of omega 3 fatty acid such as DHA, EPA due to the high content of Vitamin E.

When we realized a double blind placebo control trial for 34 persons during three months, we found just intake of 1.8g/day of this tuna oil lowered blood pressure both in the systolic and diastolic, triglyceride and cholesterol.

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Furthermore this intake of tuna oil increased the blood adiponectin and decreased leptin. In 5 person who didn't show significant blood pressure change, the increase of adiponectin, decrease of leptin, triglyceride and total cholesterol was observed. For all of 17 persons who took tuna oil, it had a favorable effect.

The studies of adiponectin and leptin are important hormones, which control metabolic syndrome, is a hot topic as a most advanced science. However, no report was found to influence both these hormones effectively.

2. Other components

The elastin liquid extracted from tuna bulbous arteriosus is an essential component for the cosmetics, which most of the big name cosmetic companies in Japan are using.

When extracted by this hybrid method, the upper parts are concentrated by oil. Lower liquid parts are very rich with soluble collagen and many useful components such as hyaluronic acid, chondroitin surfate, taurine, vitamin B group, folic acid, zinc, copper and other minerals. The bottom parts are solid parts; we obtain bone, useful as a source of collagen and hydroxyapatite, also paste type phosphatidylcholine, and myoglobin rich matter.

These components are very rich and contain within the range of the value that Ministry of Health, Labour and Welfare admit to classify and mention "High Contents".

Each part of tuna contains different components to be used for the different purpose. This indicates there is more ample market.

We confirmed by human open trial that intake of the powder of tuna guts mixed with green tea powder reduced the uric acid. Powder extracted from tuna roe also contains very rich functional components.

If we success to reduce odor and color completely we'll use 100% of fish waste effectively.

To achieve Zero Emission (zero waste) we have to utilize uppermost of wastes. As the results we contribute to reduce the load for the environments. If we can find many functional components with this process, then we may utilize it for the improvement of human health, as it becomes a time demanding industry.

Reference:

1) Morihiko Sakaguchi, Takashi Hirata, Zero Emission of Fisheries Resources. NTS, 2005

2) Yoshinori Ito. Hybrid Extraction method; Innovative Method to Produce Non Oxidative Tuna Oil: http://precedings.nature.com/documents/3110/version/1

ICFA

Solidarity among fishing organizations in the world pushed ahead at ICFA meeting

The annual meeting of the International Coalition of Fisheries Associations (ICFA) was held in Rome Sept. 27-29 to discuss various international issues such as COP10 of the Convention on Biological Diversity, the fisheries certification scheme (marine eco-labeling) and stock management in tuna fisheries. As in last year, an informal exchange of views was conducted with the United Nations Food and Agriculture Organization (FAO).

Regarding the marine eco-labeling issue, Japan explained the present state of its MEL (Marine Eco-label) Japan scheme. It said that the MEL Secretariat has certified four fisheries to date, and would further start examination of pole-and-line skipjack fishery shortly, thus showing that the certification is receiving steady reactions for further expansion in the days ahead. Japan elaborated that, in applying to MEL Japan certification, Japanese fishermen, distributors and retailers are not aiming to defend themselves from possible consumer boycott, but rather have positive approach to convey to consumers their serious approach and effort toward stock management and they are committed to promote this campaign in the years to come. This presentation by Japan gained understanding of ICFA participants at the meeting.

With respect to the tuna issue, Japan introduced the resolution to promote the control of tuna excessive capacity adopted by the Organization for the Promotion of Responsible Tuna Fisheries (OPRT) (See OPRT homepage, http://www.oprt.or.jp/), and called for restraint of tuna fishing capacity around the world.

Notably, Japan touched on the present increase of fishing capacity by tuna purse-seine fishing vessels, and called on ICFA members for the need to develop and implement global measures as soon as possible to restrain fishing capacity, or at least to freeze the number of tuna fishing vessels and their capacity. At the same time, Japan addressed the issue of promoting the right of developing countries to develop their own tuna fishing.

(ICFA was established in 1988 as a non-governmental organization consisting of fisheries associations of several countries. It now has, as its members, associations from major fishing countries in the world. ICFA upholds the concept that the oceans constitute an important food source for mankind and is committed to conserve the oceans and maintain appropriate fishing activities.)

MEL Japan News

Offshore and Pelagic Pole and Line Skipjack Fisheries certified as sustainably managed fishery by MEL Japan

The National Offshore Tuna Fisheries Association of Japan obtained Marine Eco-label Japan (MEL) certification in the production stage for Offshore Pole and Line Skipjack Fishery December 13. The Japan Tuna Fisheries Cooperative Association also obtained MEL certification in the production stage for Pelagic Pole and Line Skipjack Fishery on the same day. Ten processors obtained Chain of Custody (COC) certification for this fishery, which enables distribution of labeled products.

With these certifications, the majority of the Japanese Pole and Line Skipjack Fisheries have been certified by MEL Japan.

Most of the skipjack produced by the above certified fisheries will be distributed as *sashimi* (raw) and *tataki*

(lightly seared outside).

The certification is a significant step toward expansion of distribution of the products in retail stores for consumers, particularly in view of the volume of the fish produced by the newly certified fisheries. The set-net fishery in Minamikayabe region is also been assessed and expected to be certified in 2011.

The MEL Secretariat said the number of fisheries so far certified under its scheme totaled six.

CBD COP10

Toward the goal to ensure biological diversity in the future
--Solution of the overfishing issue envisioned by 2020--

The 10th conference of Parties (COP10) of the Convention on Biological Diversity (CBD) was held in Nagoya, Aichi Prefecture, Japan on November 18-29.

It closed its 12-day session on November 29 by adopting the Nagoya Protocol regarding the access and benefit sharing on genetic resources as well as the Aichi-Nagoya Strategic Plan which provided goals (Aichi Target) concerning the conservation of biodiversity by 2020. The conference was attended by more than 13,000 representatives from 179 Contracting Parties, international organizations and non-governmental organizations (NGOs).

The Strategic Plan put forth its mission with the target year set for 2020. The Plan explicitly stated that it will "take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services, thereby securing the planet's variety of life, and contributing to human well-being, and poverty eradication."

Specifically, the Plan provided for 20 targets. Regarding the issue of overfishing, it noted in Target 6: "By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits."

Regarding Ecologically or Biologically Significant Areas (EBSA), it was agreed that a series of regional workshops will be held through cooperation of Contracting Parties and related organizations such as the U.N. Food and Agriculture Organization (FAO), on the condition of fund availability, to promote understanding on the application of criteria for EBSA establishment, and request the CBD Secretariat to accumulate scientific and technical information and instances obtained in those workshops.

With respect to marine living resources, it was decided to encourage Contracting Parties to take appropriate measures to utilize them sustainably, with due heed to biological diversity.

As for Target 11 that envisions setting the proportion of the marine protected area at X%, advanced countries asserted that this X should be 15%, while China and Africa supported 5-6%, and most of other countries, including Norway and Iceland, backed 10%. In the latter part of the discussion, Costa Rica strongly insisted on 20%. The values of 6, 10 and 20 remained as final options, and the Working Group Chair proposed "17% for land and 10% for the ocean," which became the compromise of the Working Group.

However, the marine protected area does not imply total prohibition of fishing. It could be interpreted that 10% is the combination the areas in which conservation measures are implemented and the protected area. The value was explicit, while it left room for various interpretations. Meanhile, during the session, the Marine Eco-label (MEL) Japan made appeal for sustainable use of marine products and conservation of the marine environment in a booth set up in a room adjacent to the conference hall.

Tuna stock management

ICCAT recovered ability to conserve and manage Atlantic Bluefin tuna

The International Commission for the Conservation of Atlantic Tunas (ICCAT) held its annual meeting from 17th to 27th of November 2010 in Paris. The meeting was attended by over 500 delegates from 35 contracting parties as well as inter-governmental and non governmental organizations. A significant portion of the work of the meeting dealt with Atlantic bluefin tuna, which has been affected by overfishing in recent years, especially in the Mediterranean Sea.

New improved measures for monitoring, surveillance and control were adopted to ensure compliance by the parties with ICCAT management measures. Japan played an important role in introducing measures for strengthening compliance with management regulations. Given the improved monitoring, surveillance and control measures, and the result of the ICCAT scientific committee, TAC for 2011 was set at 12,900 t for Eastern Bluefin tuna, about 4 % lower than TAC for 2010. For the Western Bluefin tuna stock, the TAC for 2011 was set at 1,750t., slight reduction from the 2010 TAC (1,800 t). A Japanese official commented on the result of the annual meeting, " Chance of rebuilding the Atlantic Bluefin tuna was highly ensured. "

Topics

World seafood supply in 2005-2007 rose to record high of 110 million tons reflecting strong demand: FAO

The average annual supply of seafood, excluding marine mammals and aquatic plants (such as seaweed), in 2005-2007 rose to yet another all-time high of 11,078,734 tons, surpassing by 5.7% the previous record registered in 2003-2005, the United Nations Food and Agriculture Organization (FAO) said recently.

As the world population in that period stood at 6,591.15 million, up 2.4% from the previous three-year period, per-capita supply surged 3.3% to 16.8 kilograms. This was also a new record and was a slight upward revision from the preliminary figure of 16.7 kilograms made public earlier.

The supply of seafood was calculated as total fishery and aquaculture production minus the amount for non-food use, and also plus imported seafood and minus exports of seafood based on FAO's unique conversion procedure.

The amount of trade was based on round weight. The changes in inventory were not considered as only a handful of nations make inventory statistics public.

FAO said that fishery and aquaculture production turned up 4.8% to 137,953,425 tons, of which non-food products accounted for 27,489,947 tons, down 9%.

Imports of fish and shellfish for edible use totaled 36,622,139 tons, up 4.0%, while exports expanded 11.3% to 38,565,397 tons.

Of total seafood supply, that for advanced nations edged up 1.8% to 32,511,393 tons. Per-capita supply came to 24.1 kg, up 0.9%, on population of 1,350,876,000, up 0.8%. By contrast, supply in developing countries climbed 7.6% to 78,269,341 tons, with per-capita supply standing at 14.9 kg, up 4.6%, on population of 5,240,664,000, up 2.8%.

By country, China topped the list of supply by a large margin with 34,094,458 tons, up 4.6%. Per-capita supply increased 3.3% to 26.3 kg on population of 1,297,812,000, up 1.2%.

Japan came to the second position with 7,472,150 tons, down 7.5%. Per-capita supply was 58.6 kg on population of 127,432,000, down 0.3%.

Japan was followed by the United States with 7,393,719 tons, up 2.9% (per-capita supply leveling off at 24.2 kg on population of 305,704,000, up 3.0%)

Among top 10 countries, 8 were Asian countries, including India and Indonesia, indicating active demand in this region.

(This article is based on the Nikkan Suisan Tsushin)

Research results on eel ecology made public

The Fisheries Agency (FAJ) and the Fisheries Research Agency (FRA) announced on Sept. 30 the results of the research on the ecology of eel spawning grounds carried out in the Pacific in the western area of Mariana Islands.

The research was conducted by FAJ's two fishery research vessels -- by Shoyo Maru July 5-August 23, and by Kaiyo Maru July 28-Sept.22. The research vessels caught five eel juveniles and one adult individual (of 43 cm) in the area near the spawning ground. The researchers also observed eel's swimming patterns.

Kindai ties up with a trading firm for bluefin tuna farming

Kinki University (Kindai) has recently entered into a technological tie-up with Toyota Tsusho Corp., a major trading firm based in Nagoya, for full-scale bluefin tuna farming.

Toyota Tsusho has invested Y30 million to establish Tuna Dream Gotoh Co., a company to raise tuna seeds for full-scale farming, in Gotoh, Nagasaki Prefecture, western Japan. The new firm will build at-sea cages on Fukue Island in Gotoh for raising tunas in the intermediate stage.

Kindai will provide artificially hatched bluefin tuna seeds and seed stocking knowhow, and Tuna Dream will raise the seeds to the size of harvestable natural juveniles.

Whale research in Japan's coastal area finds whales are feeding mainly on pollock

The Fisheries Agency announced on October 8 the results of the coastal whale research catch program for 2010 in the area off Kushiro, eastern Hokkaido, which was completed on October 6. The research was conducted by the Regional Whaling Promotion Association in a radius of 50 miles off Kushiro Port in September 7-October 6.

A total of 60 minke whales were sampled -- 41 males with the average body size of 5.8m, and 19 females of 5.4 m. As a result of analysis of the stomach contents of the caught individuals, most whales were found to be feeding mainly on pollock.

Editorial

Will the international society succumb to violence again?

The time has come again for Japan to carry out its Antarctic research whaling program. Japan is committed to implement the scientific research -- a legitimate right explicitly recognized under the International Convention for the Regulation of Whaling -- for the purpose of ensuring the principle of sustainable utilization of marine living resources, the concept shared broadly by the international society.

To date, the international society has been blaming this extremist violence to harass the research but has not been able to take any action to block it. It has not resorted to the means to obstruct it, such as prohibition of the use of port facilities by the harassing vessels and ban of refueling, although such means were fully in place.

Will the international society tolerate their violent activities this year again? Isaribi would like to question the countries that virtually allow occurrence of such violence by the radical protest group -- whether they give support to their violence and cause the international society to continue to ensure the humiliation to cave in to such frenzy.