

## Preliminary Studies on Consumption Level of Fishes Obtained from Waters of Persian Gulf and Caspian Sea in Iran

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**Abstract:** There are high sources of seafood in Iranian waters of Persian Gulf and Caspian Sea but Iranian people are consumed fishes in low levels. Some individual and social factors are effective on food choices. Fish is one of foods with preventive effect on some disorders such as cardiovascular disease. Consumption of fish in Iran was low even less than world standard levels while consumption of Iranian canned Kilka fish of the Caspian Sea can be safe for human health. Since the frequency of fish consumption was low in elderly women, lower educated men and women, manual occupations and also in women in comparison to men, it is necessary to give more information about the benefits of fish consumption to population and to provide facilities to increase its use at population level. Fish low consumption in Iran is due to low information about high nutritional values of fishes and absence of seafood processing technology in all Iranian areas.

**Key words:** Iran Persian Gulf Fishes · Caspian Sea Fishes · Consumption Level

### INTRODUCTION

#### Importance of Persian Gulf Fishes Consumption in Iran:

There are no enough publications about this subject in literature and review. The consumption of fish and seafood and their popularity has consistently increased during recent years [1] and increasing demand for aquatic products is due to population growth, increase in the disposable incomes and increase in the relative preference for fish comparing with other foods [2], Fish constitutes the fastest growing sources of food in the developing world. Aquaculture is currently one of the fastest growing food production systems in the world and contributes both to the economics and food security of many producing countries [3], The growth of this industrial production has been equal to 16.5 percent in Iran during 2002 to 2004, which won the 6<sup>th</sup> place in terms of production growth [4], Common carp (*Cyprinus carpio*) with three Chinese carps (*Ctenopharyngodon idella*, *Hypophthalmichthys molitrix*, *Aristichthys nobilis*) production in Iranian polyculture system was around  $77 \times 10^6$  tons in 2006 [5], The total production of common carp was around 20 million metric tons in 2006 (Fisheries Statistical of Iran, 2006). This fish has high feed efficiency

ratio [6], but due to its feeding behavior has a bad smell [5], that cause to sell with a lower price. The annual fish consumption in Iran is about 7.7 kg, which is lower than average global consumption [5], Seafood products, such as fish fingers, sausage and fish burger could supply a variety of healthy food to increase the aforementioned ratio.

#### Role of Nutrition and Technology in Fish Consumption:

The total amount of seafood consumed is growing due to international sourcing of raw material, advances in food processing technology and healthy properties [7], Due to their nutritional value, fish and canned fish products are high quality foods that are beneficial to human health. Fish and canned fish are sources of protein rich in essential amino acids, micro and macro elements (calcium, phosphorus, fluorine, iodine), fats that are valuable sources of energy, fat-soluble vitamins and unsaturated fatty acids that, among other benefits, have a hypocholesterolic effect (antiarteriosclerosis) [8, 9], Fish is high in lysine and sulphur amino acids which make it particularly suitable for complementing the high carbohydrate diet prevailing [10] and it provide a healthful source of dietary protein and are relatively low

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in cholesterol and high in omega-3 (n-3) fatty acids [11-13], that reduce cholesterol levels and the incidence of heart disease, stroke and preterm delivery [14], Epidemiological studies on heart disease consistently indicate a protective role for fish and seafood consumption as opposed to land animal fats. Fish consumption is claimed to be associated with a reduced risk from all-cause, ischemic heart disease and stroke mortality at the population level [15], In fact consumption of fish is an essential part of a healthy and well balanced diet [16-17], Several studies have documented the long-term cardio protective benefits for adults as well as the reproductive benefits of eating fish [18], In comparison to the meat of slaughter animals, that of fish is rich in phosphorus, potassium and magnesium and the calcium content of small-boned fish is also high. Marine fish and products made from them are the primary natural source of dietary iodine. They are also rich in microelements, such as selenium, fluorine and zinc [19], Since fish, including its meat, bones and organs, contains good amounts of vitamin A, iron and iodine, it may be useful in combating the specific nutritional deficiencies, which can result in nutritional blindness, anemia and goiter. Fish also has value as an energy source. Fish bones, which may be eaten in small fish such as sardines are particularly rich in calcium and phosphorus. On a unit weight basis, fish is relatively expensive in comparison with vegetables and grains, but it is frequently less costly than alternative animal protein sources. In relation to its nutritional value, it can be quite inexpensive, even compared with vegetable protein sources [10], Global production of aquaculture products more than doubled during the 1990s, reaching around 45 million tons in 2000, while captured fisheries had a total of 96 million tons in 2000 [20].

In 2006, the amount of Iran's fish production was equal to 563.9 tons and per capita consumption of marine products was 7.7 Kg [10]. Canning is one of the common methods to preserve fish [10], The purpose of cannery is using heat alone or with other conserve materials to disable or remove all harmful microbes and canned the product so that this is preserved against contamination [21], Due to proximity to the Persian Gulf, Oman Sea, Caspian Sea, domestic water and ponds of fish, Iran has very high potential in fish production.

**Iran Caspian Sea Fishes Consumption:** Caspian Sea is the largest inland body of water in the world surrounded by Iran, Azerbaijan, Russia, Kazakhstan and Turkmenistan. Biologically the Caspian Sea is a special

region, with endemism reaching 80% at the species level. However, the biodiversity is relatively low, with the total number of species about 40% of that found in the Black Sea. The most abundant fishes in the Caspian Sea are three small species of clupeidae known as Kilka and bigeye Kilka. In the Iranian Coastal areas of the Caspian Sea, Kilka were important sources of income and protein. The most part of the caught is processed into fish meal and canned fishes. Canned fishes are a popular food source in Iran [22-24].

## CONCLUSIONS

Fish is a favorite meal for people that living around the Persian Gulf. Consumption of fish between Persian Gulf region people is high while in others areas of Iran were less than world standard levels. Fish low consumption in Iran is due to low information about high nutritional values of fishes and absence of seafood processing technology and enough handling facilities in Iranian areas.

## REFERENCES

1. Bochi, V.C., J. Weber, C.P. Ribeiro, A.M. Victório and F. Emanuelli, 2008. Fishburgers with silver catfish (*Rhamdia quelen*) filleting residue. *Bioresource Technol.*, 99: 8844-8849.
2. Taşkaya, L., S. Çaklı, D. Kişla and B. Kiliç, 2003. Quality changes of fish burger from rainbow trout during refrigerated storage. *J. Fisheries and Aquatic Sci.*, 20: 147-154.
3. Tokur, B., S. Ozkütük, E. Atici, G. Ozyurt and C.E. Ozyurt, 2006. Chemical and sensory quality changes of fish fingers, made from mirror carp (*Cyprinus carpio*), during frozen storage (-18°C). *Food Chem.*, 99: 335-341.
4. James, D., 1998. Fish utilization in Asia and the Pacific, proceedings of the APFIC symposium. Bangkok: RAP Publication.
5. FAO, 2006. State of world aquaculture: FAO Fisheries Technical Paper, 500, Food and Agriculture Organization. Rome, Italy.
6. Fisheries Statistical of Iran, 2006. Iran fishery statistical year book. Fisheries Research Institute of Iran Republic.
7. Shabanpour, B., B. Kashiri, H. Molodi and A. Hosinnejhad, 2007. Effects of washing bouts and times on surimi quality prepared from Common Carp (*Cyprinus carpio*). *Iranian J. Fisheries Sci.*, 16: 81-92.

8. Abad, E., F. Palacio, M. Nuin, A. Gonzalez De Zarate, A. Juarros, J.M. Gomez and S. Marco, 2009. Rfid smart tag for traceability and cold chain monitoring of foods: Demonstration in an intercontinental fresh fish logistic chain. *J. Food Eng.*, 93: 394-399.
9. Usydus, Z., J. Szlinder-Richert, L. Polak-Juszczak, J. Kanderska, M. Adamczyk, M. Malesa-Cieciewicz and W. Ruczynska, 2008. Food of marine origin: Between benefits and potential risks. Part I. canned fish on the Polish market. *Food Chem.*, 111: 556-563.
10. Ismail, H.M., 2005. The role of omega-3 fatty acids in cardiac protection: An overview. *Frontier. Biosci.*, 10: 1079-1088.
11. Kent, G., 1987. *Fish and Nutrition in India*. Food Policy. Butterworth and Co Press.
12. Steffens, W., 1997. Effects of variation feed on nutritive in essential fatty acids in fish value of freshwater fish for humans. *Aquacul.*, 151: 97-119.
13. Burger, J. and M. Gochfeld, 2004. Mercury in canned tuna: white versus light and temporal variation. *Environ. Res.*, 96: 239-249.
14. National Research Council, 2000. *Toxicological Effects of Methylmercury*. National Academy Press, Washington, DC.
15. Patterson, J., 2002. Introduction-comparative dietary risk: balance the risks and benefits of fish consumption. *Commun. Toxicol.*, 8: 337-344.
16. Burger, J., 2005. Fishing, fish consumption and knowledge about advisories in college students and others in central New Jersey. *Environ. Res.*, 98: 268-275.
17. Torres, I.C., L. Mira, C.P. Ormelas and A. Melim, 2000. Study of the effects of dietary fish intake on serum lipids and lipoproteins in two populations with different dietary habits. *Br. J. Nutr.*, 83: 371-379.
18. Sazaki, S. and the Fukuoka Heart Study Group, 2001. Case-control study of nonfatal myocardial infarction in relation to selected foods in Japanese men and women. *Jpn. Circ. J.*, 65: 200-206.
19. Moya, J., C. Itkin, S.G. Selevan, J.W. Rogers and R.P. Clickner, 2008. Estimates of fish consumption rates for consumers of bought and self-caught fish in Connecticut, Florida, Minnesota and North Dakota. *Sci. Total Environ.*, 403: 89-98.
20. Tuominen, T.R. and M. Esmark, 2003. *Food for Thought: The Use of Marine Resources in Fish Feed*. WWFNorway Press.
21. Anonymous, 2009. *Gross Domestic Product. Economic Research and Policy Department*. Central Bank of the Islamic Republic of Iran.
22. Footitt, R.J. and A.S. Lewis, 1995. *The Canning of Fish and Meat*. Blackie Academic and Professional Press.
23. Dumont, H.L., 1998. The Caspian Lake: history, biota structure and function. *Limn. Ocean.*, 43: 44-52.
24. Fazli, H., C.I. Zhang, D.E. Hay and C.V. Lee, 2009. Stock assessment and management implications of anchovy Kilka in Iranian waters of the Caspian Sea. *Fish Res.*, 100: 103-108.