

Fish is an important source of micronutrients to fight the micronutrient deficiency, otherwise known as the ‘hidden hunger’

Macronutrients are the major nutrients such as carbohydrate, protein and fats, required in large quantities which provide the bulk of the energy whereas micronutrients (minerals and vitamins) are needed in small amounts in the body; however, are essential for proper growth and development. The major micronutrients include the macrominerals sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), phosphorous (P) and microminerals iron (Fe), copper (Cu), zinc (Zn), manganese (Mn), selenium (Se) and vitamins (fat soluble vitamins A, D, E and K and water soluble vitamins B complex, vitamin C) etc. Although, they are required in minuscule amounts unlike macronutrients; the consequences of their absence in food are severe and lead to various forms of deficiency diseases; for example, vitamin A deficiency leads to night blindness and xerophthalmia, vitamin B1 deficiency leads to beriberi, vitamin C deficiency leads to scurvy, vitamin D deficiency leads to rickets, iodine deficiency leads to goiter, iron deficiency leads to iron deficiency anemia etc. Therefore, practice of evaluating nutritive value of diets should include not only energy and protein adequacy but also the micronutrient density of the diet. Protein hunger is chronic protein deficiency (PEM), kwashiorkor or marasmus (chronic energy malnutrition) or protein calorie deficiency (PCM) or combination of the two (PEM or PCM) whereas hidden hunger is malnutrition caused by deficiencies of vitamins and minerals but the people affected do not show any physical symptoms associated with hunger. Hidden hunger, affects one in three people around the world and keeping this in view, at the United Nation Millennium Summit (2000), micronutrient supplementations programs were incorporated as an integral part of Millennium Development Goals and their vision is to build a world free of hidden hunger through micronutrient initiatives. Iodine, vitamin A and iron are most important in global public health terms; their deficiency represent a major threat to the health and development of populations the world over, particularly the children and pregnant women in low-income countries. Iron deficiency anemia during pregnancy is associated with 115,0000 deaths each year, accounting for one fifth of the total maternal deaths.

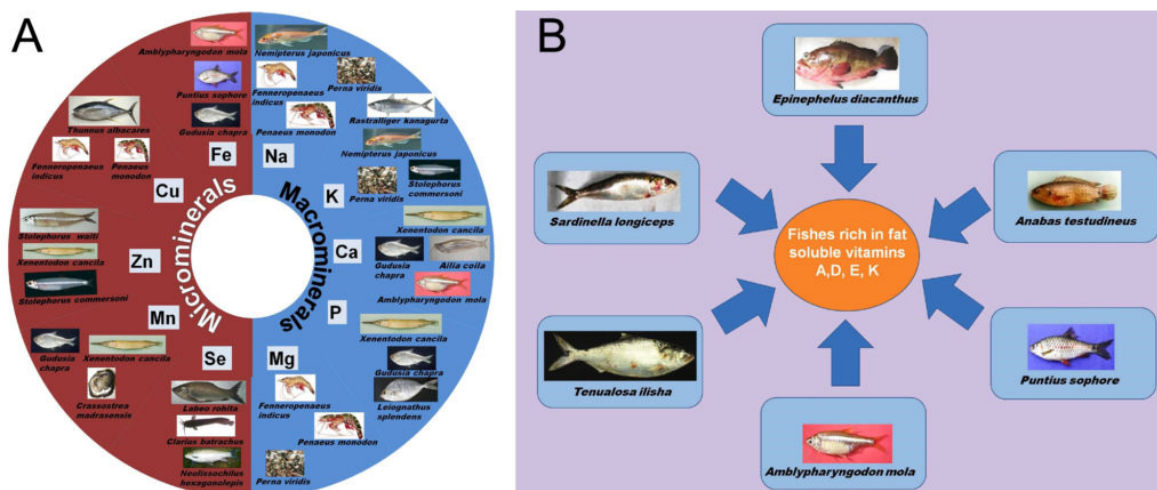


Fig. 1. Micronutrient rich food fishes commonly available in India and the Indian subcontinent. A. The fishes (top 2/3 species) rich in different macro and microminerals are shown. B. Food fishes (top few species) rich in fat soluble vitamins (A, D, E and K) are shown.

Fish is an important dietary source of most of the major nutrients (including quality animal proteins, polyunsaturated fatty acids (PUFAs) and micronutrients) except carbohydrates. Fish, especially the small indigenous fishes (SIFs) (those growing to a maximum size of about 25-30 cm on maturity) are rich in micronutrients. India, being the second in the world in total fish production and having more than 10% of the global fish diversity, the consumers have wide range of choices in selecting fish as a food; as it is both available and affordable to common people.

We have studied micronutrient composition macrominerals; Na, K, Ca, Mg, P, trace elements; Fe, Cu, Zn, Mn, Se and fat-soluble vitamins A, D, E, K of more than 50 food fishes, shellfishes, small indigenous fishes (SIFs) from different habitats across the country. In general, it is found that, the marine fishes are rich in Na and P, small indigenous fishes in Ca, Fe and Mn and the coldwater fishes in Se. The marine fishes *S. longiceps* (sardines) and *Epinephelus spp* and the SIFs are rich in fat soluble vitamins A, D, E and K. India along with its neighbouring countries (Bangladesh, Pakistan, Sri Lanka etc) contributes to about 1/5th (20%) of world's population and the micronutrient composition of the important food fishes would be of immense utility in eradicating the existing hidden hunger. The information generated by us would be useful in clinical nutrition by providing a reference point to clinicians and dieticians to prescribe specific fish for specific clinical requirements also. The detailed micronutrient composition with quantities in different food fishes and additional information are available in the database NutriFishI.

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Publication

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