

## COVID-19 & NUTRITION

First Major Lesson



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## EDITORIAL

# The Road Ahead

Nakul Parashar

It is said that well begun is half done. This has pleasantly happened in the case of Aahaar Kranti, which was launched this year on 13 April. Several scientists, policymakers, social activists, authors, and noted personalities attended and spoke at the launch function. It also witnessed launch of our monthly newsletter, popular science films, portal, and a chart detailing various vegetables, fruits, cereals, and pulses with their nutritional values. Post the launch event, organizers of this movement celebrated Guru Purnima on 24 July. With several senior government officials, including the Minister of State for Education, the event witnessed participation of several organizations that have come forward to join the movement. Inspired by the success of these events, the organizers have started receiving proactive support from several organizations from various parts of the society – corporate, public and private sector, educational organizations, autonomous organizations, and many more. In a journey like this, people came forward and joined the walk transforming it into a convoy.

It is heartening to see how this mass movement has started to reach the nooks and corners of the country. While the spread starts gaining the required momentum, it comes with a set of challenges. Our country is diverse in languages, culture, and living patterns, and thus, one-size-fits-all does not apply here. For a nationwide movement like this, spreading the word of Aahaar Kranti requires planning and shaping the communication and outreach strategies in a customized manner. Fortunately, Vigyan Prasar had begun its SCoPE (Science Communication Popularization and its Extension) activities in few languages besides Hindi and English — Assamese, Bangla, Telugu, Tamil, Kannada, Urdu, and Maithili. This foray into Indian languages came as a significant relief to the organizers while expanding the outreach.

Kannada, thus, has been chosen as the first Indian language, to begin with. Karnataka, that way, would be the first obvious geography to work. With 31 districts, Karnataka would provide the organizers of Aahaar Kranti the required test base to implement its communication and outreach strategies before starting with other states at a later point in time. As a part of the mooted activities, food charts would be produced in a more significant number in the Kannada language. These charts would then be distributed in all the 31 district headquarter-based government schools. The next step would be to take these charts at the Taluk level and then further down to blocks and the village level. Besides these charts, the idea would be to prepare regular news items in Kannada that can be published by leading Kannada dailies and monthlies. Short films in Kannada related to Aahaar Kranti would be produced, and all other efforts of SCoPE-in-Kannada would include Aahaar Kranti.

Aahaar Kranti is a movement that has raced at the teacher's level as more and more teachers are getting ready to impart the message through their classes to the children. Train-the-Trainer Modules would then be developed in Kannada for the ease of the local teachers. And yes, much more. Incidentally, Karnataka houses the international research centre on Food Technology – CSIR-CFTRI at Mysuru, making it more relevant as the launch pad for Aahaar Kranti in Indian languages. ■

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# COVID-19 & Nutrition

## First Major Lesson

Srinivasa K. Rao

*I hope with the ‘wake up’ call from COVID-19; the world will focus on nutrition and ‘raise the bar!’*

The tiny, invisible Coronavirus dominated every sphere of human life on Earth, significantly, for the last one-and-a-half year. No other single factor has influenced humanity so widely in the history of our generation. Billions stayed home for the fear of getting infected with the virus. Why is it so powerful? What is the cause of its power? Death! As of 3 September 2021, nearly 4,541,010 people have died of Coronavirus (as per Johns Hopkins University of Medicine data). Governments, scientists, doctors, medical staff, and all the professionals involved in saving lives are working hard. No other medical or health condition received so much attention to minimize or avoid death. There are an estimated 60 million deaths that occurred in 2019 before COVID-19 as per ourworldindata.org.

So, if our goal is to avoid deaths by strengthening our body, let's focus on the major avoidable killers of humans.

### Diet: A Major Risk Factor for Death

A group of 130 scientists and physicians, GBD 2017 Diet Collaborators, studied the risk factors for death from 1990-2017. Their results show that poor diet accounts for 1 in 5 deaths, which amounted to 11 million deaths in 2017. This study found that unhealthy eating is responsible for more deaths worldwide than any other risk factor. Therefore, poor diet, killing millions every year, is the significant avoidable risk factor for mortality and morbidity.

**An estimated 1,000,000 molecules are working in the human body, according to the Human Metabolomics database, making it an extraordinary molecular factory.**

### Human Body: Extraordinary Molecular Factory

The primary function of human body is to produce only one product—Energy. It takes food as raw material and digests it into molecules. Then it processes them as needed for its operations to produce energy. An estimated 1,000,000 molecules are working in the human body, according to the Human Metabolomics database, making it an extraordinary molecular factory. Any imbalance in the dynamic molecular operation will result in a disease state. That can be brought to normal primarily with food, if not with medicines. Therefore, when the diet is the primary risk factor or cause of death, we should focus on it, minimizing the avoidable deaths.

The human body needs some 150 nutrients from food. Macronutrients, carbohydrates, proteins, and fats are needed in larger quantities and micronutrients, vitamins, and minerals, in smaller amounts. The 13 essential vitamins that human body needs are vitamins A, C, D, E, K, and the B vitamins:



thiamine (B1), riboflavin (B2), niacin (B3), pantothenic acid (B5), pyridoxine (B6), biotin (B7), folate (B9) and cobalamin (B12). The 16

essential minerals that the body needs are calcium, phosphorus, potassium, sulphur, sodium, chloride, magnesium, iron, zinc, copper, manganese, iodine, selenium, molybdenum, chromium, and fluoride.

When a metabolic process is affected by more than one factor, the law of limiting factors states that its rate is limited by the factor that is nearest its minimum



available to the body at a balanced/optimal level for maintaining good health.

value. So, the health of a person is determined by the nutrient that is available at the lowest concentration, no matter how much more the other nutrients are given. Therefore, all nutrients—macro and micro—must be made

### Global Malnutrition

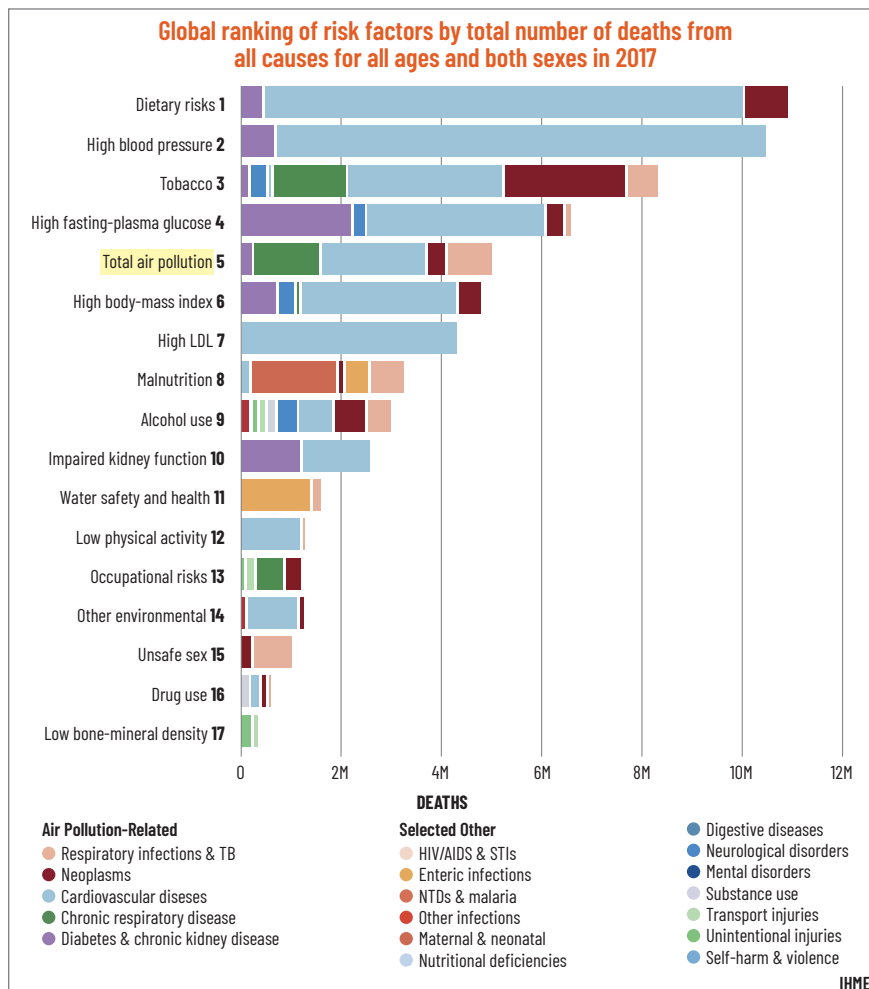
Globally, an estimated 2 billion people do not consume the food needed for healthy growth. Poor dietary habits are associated with a range of chronic diseases. Scientific research in the area of human health and nutrition highlights the urgent need for coordinated global efforts to improve the quality of human diet.

Lack of sufficient macro and micronutrients causes malnutrition or undernutrition. Excess of macronutrients and an imbalance in micronutrients cause obesity. Further imbalance in macro and micronutrients causes diabetes and other unhealthy states of the body.

### Food Diversity

Ideally, a wide range of foods can give all these nutrients for a healthy human body. But, according to Rome-based Biodiversity International, at present, fewer than 200 plants worldwide are cultivated commercially, out of 6,000 that are useful as food. Further, the bad news is only 5—rice,

**Scientific research in the area of human health and nutrition highlights the urgent need for coordinated global efforts to improve the quality of human diet.**



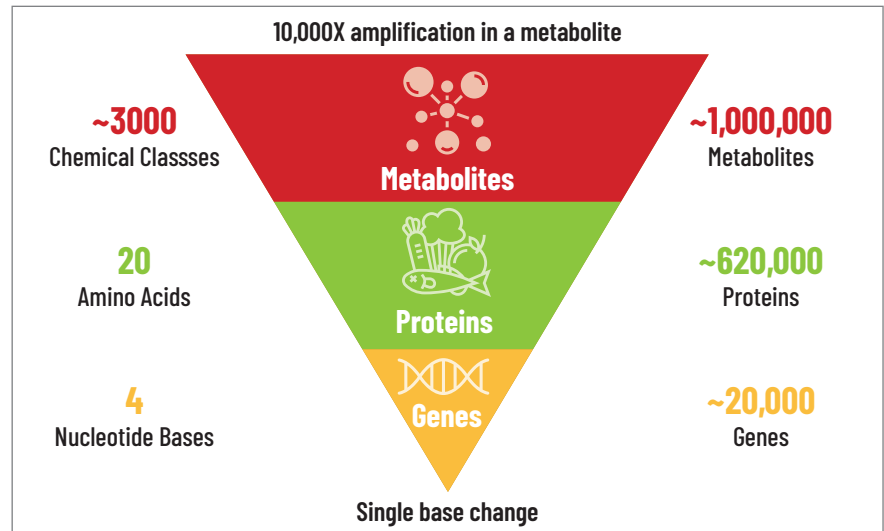
Source: <https://www.healtheffects.org/announcements/state-global-air-2019-air-pollution-significant-risk-factor-worldwide>

wheat, maize, millet, and sorghum—account for 60% of the human energy supply. Generation after generation, we are making our food choices narrower and narrower. Thus, the nutrients needed are missing in the human diet. Loss of nutrients due to lack of food diversity is resulting in chronic diseases. Diet is part of our cultural and personal habits, and it is dependent on the financial situation of a person as well. A major change in the diet is not an easy task to achieve. But it is the need of the hour. It is important to start adding new food items already available in the market.

### Food Databases

Indian cuisine varies widely across the country according to the region, culture and tradition, characterized by the use of different spices, vegetables, grains, fruits and a variety of animal source foods. It is thus essential to prioritize foods for compositional analysis. One method to set priorities is the 'key foods approach' which is defined as those foods that contribute up to 75% of the nutrient's intake by the population. The method combines food consumption data with its nutrient composition and ranking the foods by applying a scoring system to identify the key foods that contribute significantly to the diet in terms of their nutrients.

FooDB is the world's largest and most comprehensive resource on food



Source: *Physiol Rev.* 2019 Oct 1;99(4):1819–1875. doi: 10.1152/physrev.00035.2018.

constituents, chemistry, and biology. It provides information on both macronutrients and micronutrients, including many of the constituents that give foods their flavour, colour, taste, texture, and aroma. There are 797 food

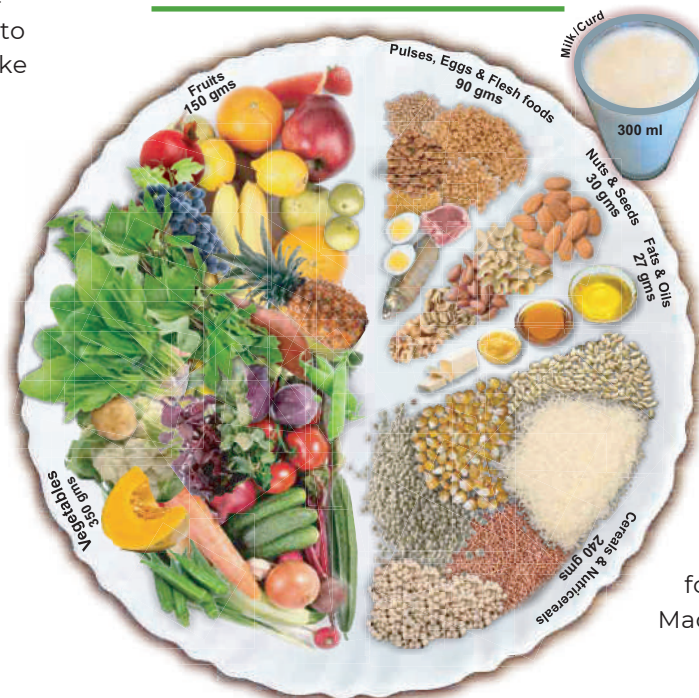
**There are 797 food items in the FooDB database. Using this database, you can try to increase diversity in your food for better health.**

items in the FooDB database.

Using this database, you can try to increase diversity in your food for better health.

### Two Hundred Food Items for Better Health

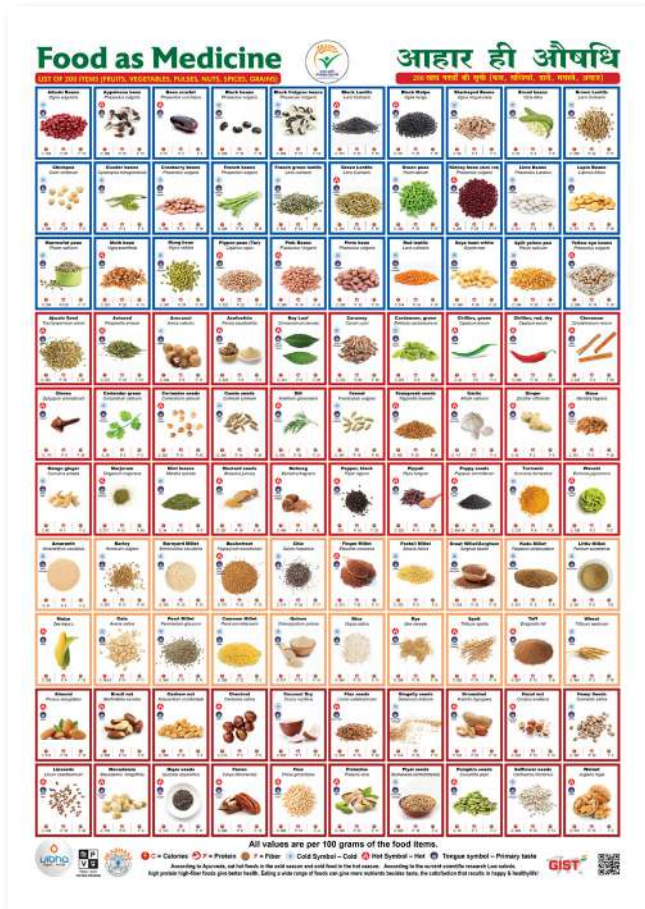
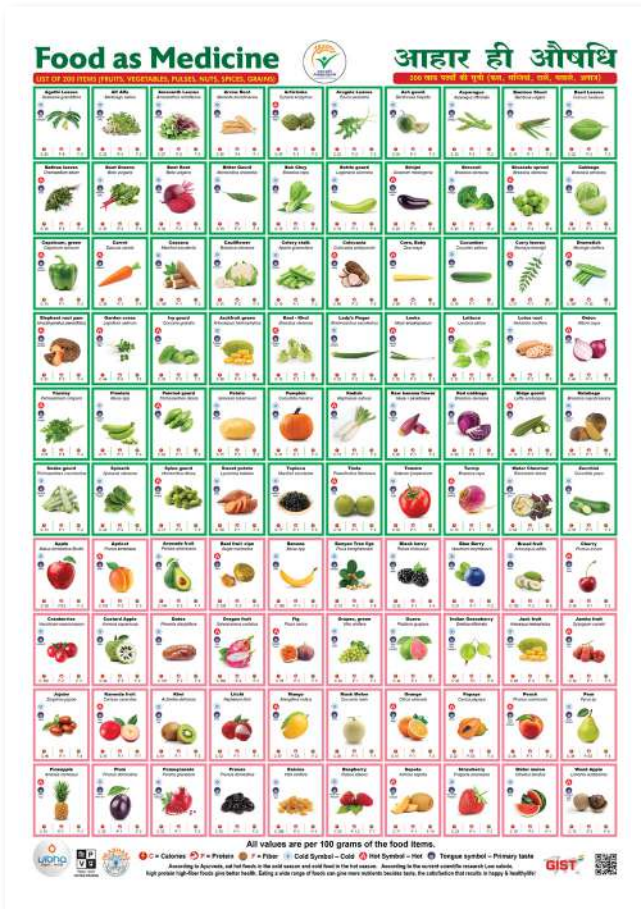
We have developed a chart for 200 plants that are useful as food. Their consumption is known to give good health. Most of them are easily available in the market and can be grown also. Even those who are living in urban areas can grow and increase their food diversity for better health.



### Grow Your Food

There are several efforts to grow fruits and vegetables by people across India. If these efforts are spread well and people's ability to consume wide range of foods is increased, then health of our countrymen would improve.

A retired couple from Tamil Nadu's Dharmapuri district has set up a mini forest on their rooftop. Madhubalan and his



wife, R.R. Suseela, who both worked with the agriculture department, grow over a 100 plants in a 1,500 square foot area and have trained over 100 families in organic farming in their neighbourhood. Several such examples can be found to get inspiration and have better nutrition through food diversity.

**My Plate for the Day – For Better Health**

Diet plays a crucial role in determining the health and nutritional status of the population. The dietary diversity of a food plate is determined by several factors such as personal factors and environmental factors. Keeping this in view, an attempt has been made to understand

(i) region-wise food groups consumption and macronutrient intake;

**Ayurveda, the traditional medicine system of India, has a huge potential in preventive and curative healthcare.**

(ii) contribution of different food groups to energy, protein, fat and carbohydrates; and  
 (iii) proportion of population consuming energy obtained from various food groups as per ICMR-National Institute of Nutrition “My Plate for the Day” recommendations ([https://www.nin.res.in/nutrition2020/what\\_india\\_eats.pdf](https://www.nin.res.in/nutrition2020/what_india_eats.pdf)).

**Food For Better Health and Immunity To Fight COVID-19**

Government of India issued measures that one can adopt for

better immunity to fight COVID-19 based on thousands of years of knowledge from Ayurveda.

Ayurveda, the traditional medicine system of India, has a huge potential in preventive and curative healthcare. COVID-19 pandemic has ushered in an era of renaissance for AYUSH in which enhancing immunity has been projected as the utmost strategy to combat the disease. Please visit the site for further details: <https://blog.mygov.in/ayurveda-for-immunity/>

Nutrition is the foundation for good health besides your genes. Strengthen your health with information, knowledge, and advice from well-established sources in exercise and specific areas of health. ■

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# Nutrition in the First Thousand Days

**Shikha Srivastava**

**N**utrition, behaviour, personal hygiene and immunization are the four most important components of a child's health. The first 1000 days of life between a woman's pregnancy and her child's second birthday is a unique period of opportunity when the foundations for optimum health and development across the lifespan are established. The right nutrition and care during the 1000-day window influences not only whether the child will survive, but also his/her ability to grow, learn and rise out of poverty. The thousand days not only include breast feeding, weaning, infant food but also the maternal nutrition in post-partum period. Many diseases of adults, e.g., heart disease, high blood pressure, and diabetes are related to under nutrition in foetal life and early infancy.

## **Nutrition and A Child's Development**

A child's brain begins to grow very early in pregnancy and develops at an astonishing speed. At the fourth week of pregnancy, the brain has an estimated 10,000 cells, and by the 24th week it contains 10 billion. The nutrition that a baby gets from the mother through her diet is the fuel that drives much of this incredible transformation.



**The nutrition that a baby gets from the mother through her diet is the fuel that drives much of this incredible transformation.**

Nutrients such as folic acid, iron, zinc, and iodine as well as protein and fatty acids play a vital role in building a baby's brain during pregnancy. When one or more of these are absent during pregnancy, the baby could be at risk for developmental delays, birth defects and cognitive deficits.

## **Early Childhood**

While a newborn's brain is only one quarter of the size of an adult's, it grows to about 80% by the age of 3 and reaches 90% of adult brain size by the age of 5. In early childhood the brain is busy forming connections that allow the brain cells to



communicate with one another. Growing brains need nutritious foods rich in iron, zinc and protein. Toddlers need proteins and other iron rich foods to avoid a deficiency in this key nutrient which in turn can impair their learning abilities and behaviour.

### Maternal Diet During Pregnancy

A nutrient rich maternal diet before and during pregnancy is associated with improved foetal health, more appropriate birth weight and increased rates of maternal and infant survival. Ideally, the time to prepare nutritionally for pregnancy is well before conception. A woman who has adequate nutrient stored, particularly folic acid, and has a healthy weight for height has reduced risk for maternal and foetal complications during pregnancy.

Women of child bearing age who may become pregnant and those in the first trimester of pregnancy are advised

to consume adequate folic acid daily from fortified foods or

### Nutrition education and counselling is a widely used strategy to improve the nutritional status of women during pregnancy.

supplement in addition to normal routine diet.

### Maternal Nutrition

Maintaining good nutrition and a healthy diet during pregnancy is critical for the health of the mother and unborn child. Nutrition education and counselling is a widely used strategy to improve the nutritional status of women during pregnancy. The strategy focuses primarily on promoting a healthy diet by increasing the diversity and amount of foods consumed; promoting adequate weight gain through sufficient and balanced protein and energy intake; and promoting consistent and continued use of micronutrient supplements, food supplements or fortified foods.

### Importance of Breast Milk in Brain Development

Breast milk contains a variety of nutrients and proteins as well as growth factors and hormones that are vital to a baby's brain

development and cannot be replicated in infant formula. It involves a great deal of mother-to-child touch and nurturing interaction. Breastfeeding helps in delay of new pregnancy and takes care of the mother's health too. The physical act of breast feeding also plays an important role in strengthening a baby's sensory and emotional circuitry which are critical for both cognitive and socio-emotional development. It is consistently associated with higher performance on intelligence tests among children and adolescents. Baby's brains are shaped not only by the quality of the nutrition but



### WHEN TO START COMPLEMENTARY FEEDING

- Swallowing of solid food: 6-7 months, side-to-side movements of tongue, 8-12 months;
  - Head/neck control and hand-to-mouth coordination;
  - Mouthing and biting;
  - Mature intestine, ready to digest pulses and cereals;
  - The baby loves chewing semisolid food, as there is hardening of gums and eruption of teeth;
  - Tendency to push solids out of mouth decreases.







**To support growth, protein needs (per kg of body weight) are higher in infancy than in any other life stage.**

also by the quality of the affections they have with their caregivers.

### **Protection of Mothers Against Infection**

If the mother gets any infection her white cells make antibodies to protect her and some white cells pass to the baby through breast milk and protect the baby.

### **Complementary Feeding**

Exclusive breastfeeding is adequate for the baby till six months of life. After six months, breastfeeding alone is no longer enough for optimal growth and development of the child. Weaning/Complementary feeding is the systematic process of introduction of suitable food at the right time in addition to mother's milk in order to provide

needed nutrients to the baby (UNICEF, 1984).

To support growth, protein needs (per kg of body weight) are higher in infancy than in any other life stage. The best diets for infants are high in fat and moderate in carbohydrate. Many commercially available infant foods are expensive and often have exaggerated health claims. Some ready-to-use foods have artificial flavour or colour and may not be a suitable or healthier option.

### **Food Items for Complimentary Feeding**

Khichdi, soft rice and dal, chapati, roti, bhakhri dal, parantha, ghee, idli, dosa, dhokla, mashed potato, sweet potato, mashed banana, pulpy fruits, kheer or milk-based cereal preparations, sprouts, pulses, legumes, dry fruits in crushed form (groundnuts, almonds, cashew, nuts etc.)

### **Items to be Avoided as Complementary Food**

Biscuits, breads, pastry, chocolates, cheese, softy ice cream, donuts, cakes, commercial breakfast cereals, etc. should be avoided altogether for children below 2 years. Also, tinned food, packaged or stored food, artificially cooked foods with preservatives or chemicals, fruit juices and fruit drinks, and repeatedly fried food items containing trans fatty acids should be avoided. ■

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## **PRINCIPLES OF INTRODUCTION TO COMPLEMENTARY FOOD**

- Start feeding with small amount and gradually go on increasing the quantity with increasing age of the child.
- Consistency, frequency and variety of food should be changed as the infant grows.
- During illness more fluids including frequent breastfeeding and soft food items should be given

### **FOR 6-8 MONTHS**

- Begin with mashed food
- 2-3 meals per day with frequent breastfeeding
- Begin with 2-3 tablespoons

### **FOR 9-11 MONTHS**

- Mashed food, finely chopped food that can be picked up by the baby
- Daily 3 meals and 2 snacks
- Average amount of each meal should be 100-125 ml

### **FOR 1-2 YEARS**

- Staple family food, mashed or chopped, if required
- Daily 3-4 meals with continued breast feeding and additional snacks
- Addition of ghee, butter, sugar, jaggery, vegetable oils as energy sources
- Combining of cereals and pulses to ensure delivery of all essential proteins
- Malting and (amylase-rich flour ARF) reduces viscosity and improves digestibility



# Indian Gooseberry (*Amalaki*) The Nectar of Life

## K. Srinivasan

Indian gooseberry (*Emblica officinalis* or *Phyllanthus emblica*) are the acrid, sour and astringent fruits of the tree belonging to Phyllanthaceae family, grown in tropical deciduous forests. These trees are revered as sacred and worshipped in India. Indian gooseberry is also familiar as Amla fruit – derived from the Sanskrit word '*Amalaki*', meaning 'Nectar of life' since it can cure humans from many ailments. In the Ayurvedic system of medicine, it is considered that *Emblica* fruits aid in balancing the three doshas (*Kapha-Vaata-Pitta*) in the body and thus remove the root cause of all ailments. The Ayurvedic polyherbal concoction '*Triphala*' which consists of dried fruits of

three medicinal plants native to India has been used as a healing remedy for thousands of years. *Triphala* consists of *Amalaki* (*Emblica officinalis*), *Bibhitaki* (*Terminalia bellirica*), and *Haritaki* (*Terminalia chebula*). It is believed that a combination of such synergistic herbs provides better therapeutic effectiveness and is a more powerful treatment than any individual component. The anti-inflammatory properties and protective influence against certain cancers are the hallmarks of the therapeutic applications of '*Triphala*', while it is popularly

**Amla is a staple in the indigenous Ayurvedic system of medicine – the world's oldest medical system.**

used to protect against dental disease and cavities, and as a natural treatment for digestive issues like constipation.

Indian gooseberry, in its fresh as well as dried form, is commonly used as a food acidulant as an alternative to lime, amchur, and tamarind. These berries have multiple medicinal properties which are attributable to the rich vitamin C and tannin contents. It is considered to be a coolant, diuretic, anodyne, ophthalmic, carminative, digestive-stimulant, stomachic, laxative, rejuvenative, and antipyretic.

### Health Promoting Antioxidants

*Emblica* berries are low in calories and fat, yet packed with nutrients. Per 100 g of the fresh fruits



contribute approximately 77 kcal, 0.5 g protein, 18.7 g carbohydrate, and 6.1 g dietary fibre. They are particularly rich in dietary fibre, minerals (copper, manganese, and potassium), and vitamins (C, B5, and B6). One cup (150 g) of gooseberries provides 26% of the daily requirement of fibre.

Emblica berries are an excellent source of antioxidants in the form of vitamin C and several phenolic phytochemicals such as flavonols, anthocyanins, phenolic acids, and organic acids. The extent of retention of this vitamin after drying of the Emblica fruits is remarkable with shade drying and sun drying not making a difference. The amount of vitamin C retained in the dried Emblica fruits is comparable to the amounts present in several other fresh fruits such as sweet lime, orange, guava, pineapple, etc., thus making dried Emblica fruit still a good source of vitamin C. Flavonols in gooseberries are quercetin, myricetin, kaempferol, and isorhamnetin, and are potentially protective to heart and cancer preventive. Emblica berries are rich in organic acids which prevent iron accumulation in cells and hence reduce the risk of age-related brain diseases such as Alzheimer's and stroke.

Emblica berries can be best eaten as fresh fruit as it is or in combination with yogurt, salads, chutneys, etc. Fresh fruits are used in the preparation of *dal* (a lentil preparation) and *murabba*. Emblica fruit pulp is also ideally used in the preparation of shampoos and hair oils; Emblica shampoos and hair oil are traditionally believed to nourish the hair and scalp and prevent premature grey hair.

### Helps in Healthy Ageing

Emblica fruits are a part of 'Amalaki rasayana,' a common Ayurvedic herbal formulation used for healthy aging and longevity by the elderly population. While diminishing DNA repair is the hallmark of ageing, Amalaki rasayana consumption has been understood to promote DNA stand break repair in aged individuals.

**Emblica fruit extracts support gastro-protective activity neuroprotective and cognition enhancing effects. It relieves anxiety and depression. It also shows potent anti-pyretic (relieving fever) activity.**

### Anticancer Effects

Emblica fruit is rich in antioxidant polyphenols, especially tannins and flavonoids that may reduce the risk of certain types of cancer including colon, pancreas, and breast. The antioxidant phytochemicals are thought to reduce and counteract damages from oxidative stress and inflammation responsible for the development of cancer. Emblica fruit is understood to scavenge free radicals, decrease lipid peroxidation, show anti-inflammatory, anti-mutagenic, and immunomodulatory effects.



Emblica fruit extract can also reduce the harmful effects of radiation and chemotherapy employed in cancer treatment.

### Managing Diabetes

The polyphenol-rich Emblica fruit can protect the body from the oxidative stress caused by high blood sugar in diabetic condition. It also assists in body's sensitivity to insulin leading to an effective control of blood sugar. Dried Emblica fruit powder (1-3 g daily for 21 days) given to diabetic patients is shown to reduce fasting and postprandial blood glucose. Emblica fruit extract has also shown insulin sensitizing properties in the adipocytes (body's fat cells) by increasing glucose uptake.

Emblica berry is also cardioprotective in diabetes exerted through protection of the antioxidant levels in the heart, in addition to preventing the raise in unhealthy raise in lipid constituents in cardiac tissue.



### Good for Cardiovascular Health

High blood cholesterol level is one of the risk factors for coronary artery disease. The lipid lowering and antiatherosclerotic effects of Emblica fruits immensely contribute to the cardioprotective influence. Antioxidants present in Emblica fruit improve heart health by preventing the oxidation of LDL-cholesterol in circulation, a process that increases the risk

for atherosclerosis (deposition of cholesterol in the arteries).

Additionally, phytochemicals flavonols and



### Antioxidants present in Emblica fruit improve heart health by preventing the oxidation of LDL-cholesterol in circulation, a process that increases the risk for atherosclerosis

anthocyanins present in Emblica help reduce blood pressure and improve blood vessel function, thus lowering the risk of heart disease. Potassium content of this fruit contributes to maintain a healthy blood pressure and hence vascular health.

### Protective Effect on Liver

Emblica is a constituent of several hepatoprotective formulations including the popular *Chyawanprash*.

Studies have shown

Emblica fruits to be effective in ameliorating the toxic effects of hepatotoxic agents such as alcohol, carbon tetrachloride, heavy metals, etc. Emblica fruit is also reported to have hepatoprotective effect on Non-alcoholic fatty liver disease in rat model which is closely associated with metabolic syndrome.

### Skin Protection

Emblica fruit effectively protects the skin from the devastating effects of free radicals-induced oxidative stress. Thus, it is used in skin care products. Exposure to UV-radiation causes skin sunburn because of harmful ROS. Application of herbal creams loaded with antioxidants to the skin would quench ROS and produce photo-protective effects. ■

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# Benefits of Mushroom

Ankita Mishra

**M**ushrooms can be very commonly spotted during the rainy season or in wet places, shooting out of old logs and mud walls or heap of straw or generally places enriched with humus. While many people may not want to even touch them, these have great nutritional benefits. Mushroom is now included in various forms in food items and recipes.

It is often said that our body speaks of our food, which means our growth depends on the food we eat. Food not only provides us with nutrients but it plays an important role in overall development of our body. The quality of food we take decides the development of our brain and our thought process. Mushroom is rich in vitamin D, B1, B2, B6, copper, selenium, folate, niacin, iron, manganese, potassium, magnesium and phosphorus including beneficial fibres and minerals and can promise good health and nutrition. It can be used in soup, vegetable, curry, pickle, pakoras, vadi, papad and noodles with variety of recipes.



## Mushrooms Grown in India

Mainly five varieties of mushroom are cultivated in India. All these varieties are rich in nutrients. They are grown in different environmental conditions and come in different size, colour and form. These mushrooms taste better if cooked fresh.

### Button Mushroom

This is grown in India at large quantity. White in colour, this mushroom can be eaten raw or cooked. These are used in soups, salads and on pizzas. These are low in calories and sugar and rich in protein. They are a natural non-animal source of vitamin D2 and help in absorption of calcium in our body and keep your bones strong. It is also rich in vitamin B12.

### Shiitake Mushroom

Shiitake mushroom, grown in East Asian countries, is extremely popular in China, Japan and Korea. Full of vitamin D, B1, B2, B6, copper, selenium, niacin, folate, iron, manganese, magnesium, potassium, phosphorus and other minerals. Shiitake mushroom can be included in diet as it is good for healthy heart and strong bones. Fresh Shiitake mushrooms have a light woody flavour and aroma.

### Oyster Mushroom or Dhingri Mushroom

In terms of production this mushroom is at the second place and very popular in our country because of its unique taste. It is grown on waste like straw, wood dust and discarded tea and coffee leaves. Full of nutrients, it is used to make soup, pakoras and also as vegetable.

### Doodhiya Mushroom

This variety is produced mostly in coastal areas. It is called Doodhiya because of its white colour. Its round top is generally smaller than Button mushroom but the lower part is comparatively longer.

### Straw Mushroom

This variety is also produced at large scale. It is cultivated in Kerala, Odisha, Uttar Pradesh and West Bengal. It is grown on the straws of rice and wheat. This variety is also very nutritious and unique in taste.

### Benefits of Mushrooms

Different varieties of mushrooms are grown in different parts of the world. Full of proteins, fibre



and minerals this crop is grown in the whole world. According to the information published in the January 2021 issue of Food Science and Nutrition, consumption of 84 gram of mushroom a day ensures availability of all necessary nutrients enough for the day. Mushrooms contain protein, vitamin, selenium (anti-oxidants), fibre and a lot of minerals like iron, zinc, magnesium, manganese, potassium, phosphorus, sulphur, calcium, copper etc. in abundance. Besides, it has carbohydrates and fat at low level which is good for people suffering from diabetes

and obesity. It is good for people who are anaemic. Being rich in iron it helps to maintain the level of haemoglobin in blood. Along with that it has folic acid and iron which helps build red blood cells in blood. Mushrooms are rich source of proteins which are a crucial part of our daily diet. Proteins help in repairing broken and diseased cells and building new blood cells. Mushroom is the only food which contains plenty of vitamin D that is needed for making our bones strong along with helping in absorption of calcium and phosphorus. Fibres in mushrooms help our digestive system and increase our appetite. It is good for controlling gout also.

Per 100 gram of mushrooms contain more than 20 per cent vitamin B, necessary minerals like selenium (30.0 per cent), copper (25.0 per cent) and phosphorus and potassium (10.19 per cent). A medium-sized mushroom contains more amount of potassium than one glass of orange juice or a banana. Selenium is found mostly in the proteins that we get from animal sources so it good for vegetarians as an alternative to animal protein. Mushroom is a boon for the patients of high blood pressure. It contains potassium which helps in memory and knowledge retention.

### Precaution

It is very important to know about different varieties of mushroom that are not fit for consumption. Growing on humus, they absorb harmful elements also from it and may be poisonous. ■

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Translated by Kshama Gautam

# Teachers Play a Vital Role in Anti-Malnutrition Mission 'Aahaar Kranti'

India faces an ironic problem of hunger despite abundance. Studies estimate that the country produces four times the calories that it consumes, yet many people are malnourished. The root cause of this phenomenon is a lack of nutritional awareness in all sections of our society.

After defeating hunger with the Green Revolution and creating untold fortunes in rural India with the White Revolution, it's time to bring in the Aahaar Revolution for better health, longevity, prosperous farmers and India's stature as a Vishwaguru. Aahaar Kranti aims to achieve this.

Teachers, whether at schools or Anganwadis or in their communities, are to be the pillars of Aahaar Kranti. As the next milestone in its journey, 'Guru Purnima' on 24 July was celebrated with an event where the various educational modules that have been prepared for teachers across the breadth of India was rolled out, with the ambition of reaching 31.5 crore school children.

Union Minister of State for Education, Dr Subhas Sarkar, the Chief Guest of the programme released the resource material at the online function. He handed over copies of the material to eminent badminton guru (coach) Pullela Gopichand and



Minister of State for Education Dr Subhash Sarkar, Sh. Pullela Gopichand and Padma Priya Vumma (top L to R) and Dr Yelloji-Rao K Mirajkar, Sh. Jayant Sahasrabudhe and Dr Nakul Parashar (bottom L to R)

Padma Priya Vumma, winner of the Government of India's national teacher award.

During the programme, the Minister launched a series of lectures and a video-cum-script competition being organized by NGO Shiksha Shilpi for teachers. Further, he released a special edition of Vigyan Prasar's monthly science magazine Dream 2047 on 'Aahaar Kranti' and copies of the monthly newsletter being brought out by the organization as part of the campaign.

Speaking on the occasion, Dr Sarkar stressed on the importance

of traditional food and locally available fruits and vegetables to ensure better nutrition and called for use of all forms of social media to get across the messages for good living.

Shri Jayant Sahasrabudhe, National Organizing Secretary, Vijnana Bharati, Dr Nakul Parashar, Director, Vigyan Prasar and Dr Yelloji-Rao K Mirajkar, International Convener - Global Indian Scientists and Technocrats, Forum, expressed confidence that the aspiration of Aahaar Kranti to reach each and every Indian, irrespective of age, language and socio-economic divides.

They were of the opinion that its message – balanced nutrition leads to better physical and mental health will come true and help bring in a food revolution for better health and longevity for all, prosperous farmers and raising India's stature as a 'Vishwaguru'. ■



# Train the Trainers Teachers Module 1

## Traditional Indian Thalīs

- Indian culinary traditions are balanced with nutritionally rich thalis in all regions/ states.
- Locally grown and seasonal flora and fauna, cooked in local recipes add to nutritional wholesomeness.



Source: Columbia University, CSIR, Indian Institute of Public Health, Journal of Ethic Foods, University of Chicago, UNSW Australia, Yale Journal of Biology and Medicine

## Spices

**Spices have complex combinations, with synergistic effects**

- Keep blood sugar levels in check
- Boost heart health
- Provide pain relief
- Fight inflammation and reduce cellular damage
- Contain immunity-boosting antioxidants
- Prevent asthma, allergies, and other respiratory issues
- Reduce foodborne illnesses
- Contain bioactive compounds that help digest food



Source: Central Michigan U, CFTRI, Current Cardiology Rev, Intl J of Preventive Medicine, J of Traditional & Complementary Medicine, Kingston U, Korea Food Research Inst, Mohanlal SukhadiaU, National Cancer Institute, NBRI, Tehran U of Medical Sc, U of Bologna, U of Pretoria, Youjiang Medical U