

## PLACE OF NUTRITION IN YOGA

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**ABSTRACT:** *Nutrition plays a very vital role in our life. Yoga and Ayurveda had laid down the foundations of dietetics. The valuable guidelines regarding various food articles and diet for Yoga Sadhaka, to achieve maximum benefits, are given in traditional yoga texts like Hatha Pradipika and Gheranda Samhitha. Now is the time to evaluate the place of nutrition in Yoga and to study how the dietetic principles in yoga will help to eradicate the national problem of Mal-nutrition and poverty which is the pressing need of the moment.*

### MODERN APPROACH:

Nutrition is the sum total of the process by which the living organism receives and utilizes the materials necessary for survival, growth and repair of worn-out tissues. Food is the source of the fuel which is converted by the metabolic process of the body into the energy for vital activities. Calorimetric deals with the measurement of energy requirements of the body under various physiologic conditions and of the fuel values of food which supply this energy. This unit of energy contained in foods as well as that involved in metabolic activities is most often expressed as a unit of heat, the calorie. The international energy is the joule.

The combustion of food stuff in the presence of oxygen results in the production of heat. The amount of heat thus produced can be measured in a bomb calorimeter. By this technique the calorie value of food stuff can be determined. The heat generated by the body in the course of metabolism of food stuffs, maintains the body temperature. Warm blooded animals such as birds and mammals have heat regulating mechanism

that either increase that production or radiate or otherwise dissipate excess heat, depending on temperature of their external environment.

Science all of the energy produced in body is ultimately dissipated as heat. Measurement of the vital heat production of an animal is a way to estimate its energy expenditure. There are two methods of accomplishing this:

- A. Direct Calorimetry
- B. Indirect Calorimetry

By measuring gas exchange and determining the respiratory quotient (RQ) energy metabolism studies are considerably simplified and thus rendered applicable to field studies and to clinical analysis. The respiratory quotient is the ratio of the volume of CO<sub>2</sub> eliminated to the volume of oxygen utilized in oxidation. The RQ for carbohydrate is 1; for fats 0.7 and for proteins 0.8.

The total heat production or energy expenditure of the body is the sum of that required merely to maintain life (basal metabolism) together with which additional

energy as may be expanded for any additional activities. The lowest level of energy production constant with life is the basal Metabolic Rate. The conditions necessary for measurement of the Basal Metabolic Rate are;

1. A post- absorptive state (at least 12 hours)
2. Mental and physical relaxation immediately preceding and during the test.
3. Recumbent position during the test.
4. Awaken state
5. Environmental temperature of 20- 25<sup>0</sup>C

The factors influencing Basal Metabolism are:

- A. Surface area of the person's body.
- B. Age.
- C. Sex.
- D. Climate.
- E. Racial variations.
- F. State of Nutrition.
- G. Disease.
- H. Effects of hormones.

The specific dynamic action of food stuff is the extra heat production over and above the caloric value of a given amount of food which is produced when this food is used by the body.

There are 6 major components of the diet. Carbohydrate, fat, and protein yield energy, provide for growth, maintain tissue subjected to wear and tear. Vitamins minerals and water, although they do not yield energy, are essential part of the chemical mechanisms for the utilization of energy and for the synthesis of various metabolites such as hormones and enzymes. The minerals are also incorporated in to the

structure of the tissue and solution play an important role in acid-base balance. Energy for physiologic process is provided by the combustion of the carbohydrate, fat, and protein. The daily energy requirement of the daily caloric need is the sum of the basal energy demands plus that required for the additional work of the day. During periods of growth, pregnancy or convalescence extra calories must be provided to meet the extra demands of these process.

Carbohydrate and fat "Spare" protein and thus make it available for anabolic purposes- "protein- Sparing Action" of carbohydrates and fats. This is particularly important in the nutrition of patients.

The distribution of calories in the diet depends upon:

- A. The carbohydrate intake
- B. The fat intake
- C. The protein requirement and intake
- D. The dietary supplements like vitamins, minerals and water.

In order to simplify the concept of an adequate diet for normal individuals, food stuffs have been arranged into four groups each of which makes a major contribution to diet. These groups are as follows:

1. Milk group: Milk, Cheese, Ice-cream and other milk products.
2. Meat Group: Meat, fish, poultry eggs.
3. Vegetables and Fruits: Dark green or yellow vegetables, citrus fruits or tomatoes. Some uncooked vegetables
4. Breads and cereals: Enriched or whole grain breads and cereals

This modern approach of nutrition is nicely given by Harper, et al.<sup>1</sup>

## YOGIC APPROACH

Yogic Texts like Gherandra samhitha and hatha pradipika have been guidelines regarding various food articles and diets for a Yoga practitioner (Sadhaka) interested in fruitful practice of Pranayama and other higher practices of Yoga.

### **A) The important references on recommended diet and food articles in Above Yoga Texts as are as follows:**

He who begins the practice of yoga without controlling the diet suffers from many diseases and does not make progress in yoga.

A Yoga practitioner should eat food prepared from rice, flour of barley and wheat, green gram, black gram, horse gram etc. which should be clean and free from husk. He should eat patola, surana, mana, kakkola, sukasaka, dradhika, karkati, rambha, dumbari, kantakantaka, amarambha, balarambha, rambhadanda, mulaka, vartaki and rddhi as well as the five recommended leafy vegetables- balasaka, kalasaka, patola-patraka, vastuka and himalocika

Controlled adequate diet (mitahara) which is pure, sweet, containing lubricants –quantity enough to fill only half the stomach and which is palatable and is eaten to please the self (ie. Oneself). One should fill half the stomach with food; one quarter should be reserved for the movement of the air.

A yoga practitioner should eat fresh butter, ghee, milk, sugar, sugar-cane, Jaggery, ripe plantain, coconut fruit, pomegranate, aniseed, grapes, laveli, dhatri(myrabolane), juice which is not sour, cardamom, nutmeg, cloves, paurusa, rose apple, jambala, haritaki

and dates. Similarly he should eat food which is easily digestible agreeable, well lubricated with ghee and which nourishes the elementary substances of the body and which will be pleasing for mind. In the begging for the practice of pranayama one should take milk and ghee daily and food twice a day, once at noon once in the evening.

Eating sweet and soft food first offered to the Almighty leaving one quarter of stomach empty is known as Mitahara. Wheat rice, barley and saskita (a special variety of rice), milk, ghee, sugar, butter, sugar candy, honey, dry ginger, paravara kind of cucumber, the five leafy vegetables and green-gram are considered to be wholesome food for advanced Yogis. Sadhaka should eat food this is nutritious sweet and unctuous (soft), products of cow's milk and nourishing food of their own choice suitable for the practice of Yoga.

### **B) The important references in Gheranda Samhita and hathapradipika for the diet and food articles to be avoided by Sadhaka.**

In the beginning of yogic practices one should avoid bitter, sour, salt, pungent, scorched food-such as curds, buttermilk, heavy vegetables, liquor, plamnuts, jack fruits, kulattha, masura, kusmanda, vegetable stems, gourds, berries, kapittha, kanta-bilva, palaska, kadamba, jambira, bimba, lakucha, lasuna, lotus –stalk fibres, kamaranga piyala, hingu, solmali and kemuka. He should avoid a food that is hard, polluted, putrid, producing heat inside the body, stale extremely cold and extremely hot. Eating in excess the food which bitter, sour, pungent, salty or hot, oil (mustard and sesama) and consuming alcohol, fish, meat, curds, buttermilk, kulattha, (wood apple),

berries, oil-cakes, asafetida, garlic (even in small quantities) are said to be unwholesome. Similarly food that is heated over again dry and excessively salty or sour is unwholesome and should be avoided.

Thus 'A bland diet comprising of simple vegetable proteins, low in salt content and moderately rich in cereals; lacto-vegetables and fruits that are adequate in minerals and vitamins seems to have been prescribed in Yoga.

The whole subject of yoga deals with the realization of oneself through the 'niras' or 'nirodh' of chitta i.e. complete cessation of various disturbances and turbulences of mind and consciousness. It is, therefore, a subject type of an experimental science, at and philosophy. Sensory inputs from numerous objects through the five sense of organs and systems of the body disturb us in many ways in the form of stimulation irritations etc. in yogic terminology disturbed awareness of this type is called 'Vyutthita Chitta' and through proper diet, physical activities, attitude of life and thinking one is expected to reduce this state of disturbed awareness and experiences a state of equilibrium or undisturbed awareness termed as 'Samhitha Chitta'.

Following are some of the reasons why the diet plays a central role in Yoga.

1. Practices of various postures i.e. Asanas is expected to release tensions without exertion and give rise to a sense of stability in the individual. Therefore there is no wear and tear of muscular tissues even though there is definite influence on the nervous system through increased sensory inputs.

2. Practice of pranayama involves manipulation of breathing which is directly related to the nervous system. Either slow or fast type breathing activity of breath holding or suspension of breathing involves high activity in the nervous system, especially of the sensory type.
3. Cleansing process related with internal organs like esophagus, stomach, small intestine, colon, bladder, nasal cavity essentially work on the autonomic nervous system.
4. Recitation of mantras involves increased activity of brain, even though the body may remain at rest and even in a relaxed condition.
5. During various practices, sensory inputs from within the body go on mounting up and this can lead to a nervous system, even though the individual may look sitting idle with eyes closed without any emotional or intellectual disturbance.

In the light of these reasons we can say that:-

- A. Because of internal stimulation of nervous system it is wise to withdraw external stimulating and irritating factors in the form of salt, condiments, and wines, smoking and eating very hot and cold articles. Rock salt advocated in fasting is rich in potassium which is known to have tranquillizing effect on the nervous system.
- B. Meat, eggs and fish seems to have been prohibited because of (i) they contain more sodium which can be stimulate and irritate the nervous

system, specially of yoga sadhaka in whom it becomes very sensitive, hyper- reactive and delicate at certain stages of practices; (ii) they are supposed to influence the overall feeling thinking, individual in a subtler way and one becomes incompatible with the spirit of Yoga.

- C. All the same first class proteins in the form of cow's milk and fatty acids in butter and gee could take care of the nervous system and prepare it to withstand the heightened activity when it takes place
- D. During meditation and suspended breathing it is felt that the nervous system loses its contact with the periphery in respect to the motor of food in gastrointestinal tract. Therefore avoidance of food amenable to purification and gas production, bulky food stretching intestines or colon giving rise to colic pains seems justified.
- E. The intestinal disturbance could take place because of infections. Therefore, astringent food articles seem to have some importance in such diets because they are well known for their coagulating effects. Mild digest ants like aniseed and others having aromatic substances and volitatile oils could help digestive process without irritating membrane of gastro-intestinal tract.
- F. Most of the yoga practices are non strenuous on physical plane. Therefore, vegetable proteins could repair wear and tear of tissues. Moreover, vegetables will supply the

required minerals and vitamins to the body.

- G. Cereals, tubers, fruits and honey can take care of all energy requirement of a yoga sadhaka who invariably refrains from heavy muscular exertion.

Apart from the calorific value and tissue building nature of food articles, according to nutrition science, the oriental thinking propounds that each and every food article has impact on the awareness thinking and felling aspect of an individual. It is our experience that some foods and diets give rise to a felling of heaviness in the body and inability to think and feel, while some other foods give rise to excessive stimulation of various desires, urges, and instincts. On the other hand there are some foods which help the person to develop awareness without excessive stimulation of desires urges, or heaviness in the body. In Yogic terms it is called as Sattvika Ahar.

### **INTEGRATION OF BOTH APPROACHES:**

The energy requirement of a man cannot be considered as a fixed quantity in the way suggested in textbooks on nutrition. It is variable and auto-regulatory. The requirement of an individual can only be expressed as arrange determined by the stationary variance. It follows that nutrition status cannot be represented by a simple graph, but only by a point surrounded by a tolerance region.

Proper nutrition is defined as sufficient intake of nutrients to reach the full genetic growth potential of the individual defined by various anthropometric and nutritional standards. Mal- nutrition is defined in terms of certain clinical signs of nutritional

inadequacy and/or indices of functional impairment; thus mal-nutrition then becomes abnormally low size and/or consumption. In this light do the yogic practices help to correct certain clinical signs of nutritional inadequacies and/or indices of functional impairment by taking part in metabolic activities? The answer seems to be optimistic.

Traditions and customs also play an important role in nutrition related behaviors. The custom of religious fasting provides for encouraging consumption of foods that do not form the part of conventional usual diet. A survey of the middle class families has revealed that on an average the consumption of calories and proteins is higher than normal on the day of fasting mostly because of consumption of milk and ground-nuts. Many diets and items of food have become a status symbol. In many societies the manner and style of serving food often get more attention than the quality of food. In fact, generally items of diet are not chosen because of their nutritional value, but because of the value system, likes and tradition. Nutrition and food research enlarges existing knowledge, and help in better understanding of the problems and their solutions. These areas are multiple and multi-disciplinary – i.e. agriculture related to production, biochemistry for the nutritional values of foods and metabolic process biomedical sciences for rational applications in health promotion and disease control and food technology dealing with food preservation, storage, processing, fortification etc. these efforts, however, should be relevant to our problems and solution oriented. The human nutrition thus cannot be considered in isolation from his environment. The two are inseparable. The basic problem of human nutrition is the man himself.

Each person's needs vary according to his individual make up, his personality and his way of reacting to situations around him, so that some people have higher requirements for another. The amount of food assimilated from that which is taken in depends to great extent on the functioning of the digestive system. This also varies from person to person, but it may vary from day to day or even hour to hour as well, depending on his state of mind one's emotional or mental state. One may secrete more enzymes or less depending on his state of mind, and on his attitude towards the food, what it might mean to him, or whether it looks and tastes appealing. Climatic and seasonal variables also enter in to the picture, having an effect on one's requirements. Faced with the complexity of choices in diet, biochemical individuality and the unpredictability of daily needs, it becomes quite apparent that one cannot calculate mathematically what his requirements are. According to the Ayurveda, where experimental awareness of diet played a central part certain suggestions were laid down for the practice of eating. Regularity of living is valued not as an escape from variety and change, but as providing the freedom to experience it. A self-regulatory approach to diet requires constant experimentation. These fundamentals are taken in to account when we go through the yogic approach of diet; because it is a science of self-experiences.

Some of the recent studies have shown reduction in basal metabolism after meditative state reduction in the blood cholesterol level, blood urea level, and obesity after yogic practices. Some of the yogic practices individually or in a group can also reduce blood sugar levels. If such type of studies are taken on a large population with proper experimental designs, respecting the individual variations and also taking in to account the modern

scientific methodologies of human analysis; the yogic approach of diet will throw some light on the national and international problems on clinical nutrition. On these studies nutritional policies can be framed for the development of nutrition science and in the interpretation of nutrition status of man. Yoga if made compulsory in schools (as in central schools) will be advantageous for planning nutritional projects by introducing the dietetic approach as given in Yoga. This will also help the available national resources of vegetations and also reduce the cost of the preparation of food items. These various projects on Yoga in relation to dietetics will help to achieve the so-called National Nutritional Goals compressing 6 recommended changes in present eating habits:

1. Increase in consumption of foods that supply carbohydrate of the more complex type such as plant starches. To achieve this goal, vegetables, fruits, and grains should account for 55-60% of total caloric intake
2. Reduction of overall consumption of fat from approximately 40% to 30% of total calories.
3. Reduction of consumption of saturated fats to a limit of 10% of total calories, making up the difference toward the 30% total fat allowance by consumption of poly- and mono saturated fats so as to account for about 10% of calories in each category of fats.
4. Reduction of consumption of cholesterol to about 300 mg/d.

5. Reduction of sugar consumption by about 40% so that account for only 10-15% of total calories.
6. Reduction of consumption of salt by 50-85%.

Some of the following projects will help to know the place of nutrition in Yoga:

1. Evaluation of the nutrients given in yoga texts and their nutritive values.
2. Comparison of the nutritive values of the yogic diet and modern diet and also bridge the gap between the concepts of both diets.
3. The possibility of yogic diet and yogic practice to eradicate malnutrition and if it is possible then the various means achieve this goal.
4. Utility of the principles of yogic diet to children, adolescents, pregnant women and aged persons.
5. Preparation of 'sattvik Ahaar' in a ready-made form at low cost taking into account the dietetic ingredients as suggested in yoga texts. This type of work can be undertaken by the social institutions, various food manufacturing industries and national institute of Nutrition.

We may thus move towards the cherished goal of "balanced food for balanced mind and body".

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