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AN OVERVIEW ON NUTRITIONAL ASPECTS OF VEGETARIAN AND NON-VEGETARIAN DIET

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ABSTRACT

Ahara plays an important part in the maintenance of health. Ahara that we eat not only affects our body and mind, but directly affects our nature and habits. Improper intake of ahara can affect our nutrient intake also. No medicine can perform well unless it is accompanied with proper food. The classification of the different aharavarga with detailed description of its attributes on the basis of their panchabhautika predominance can be found in classics. Humans depend upon vegetarian and non- vegetarian sources for food. But less people have awareness on the nutritional aspects of each type of food. Either due to religious reasons or due to preferences, people adhere to any of the type of diet ending in nutritional deficiency disorders. The judicious blending of different types of food can lead to a better nutrition.

KEYWORDS: Nutrition, Aharavarga, Vitamins, Dietary fibre.

INTRODUCTION

Food is consumed not only to gain the nutrients and the required energy but also to satisfy the human taste. Every human being has the right to choose the type of food, the flavor etc. The choices may vary from person to person, from one religion to another or among communities depending on a number of factors viz. socio-economic status, religion, food availability and family tradition. The most common choice in India is regarding the vegetarian and non-vegetarian foods. India is a country with vast diversity wherein you can find people from different religions. Vegetarianism is strongly linked in a number of Indian religions such as Hinduism, Jainism and Buddhism. It is mandatory for everyone in Jainism and Mahayana Buddhism, and some 30% of all Hindus are vegetarian. In the Abrahamic religions (Judaism, Christianity and Islam) and in Sikhism, vegetarianism is not promoted by mainstream authorities, but is observed on religious grounds.[1]

Sometimes, the choice depends upon the availability of foods in economical rates too. The staple foods in coastal regions of India may be fish and other non-vegetarian foods as it is cheaper when compared to other vegetarian foods that are exported from other states. In certain cases, on medical advices, people have to switch on to a new pattern of diet. It can be due to any type of food allergy (food intolerance or food irritability), life style diseases such as diabetes, heart diseases etc.

Mothers also play an important part in regard to the food habits as the judicious mixing of all the nutrient rich foods in the diet of children is necessary to prevent deficiency diseases in them. Children will develop likings and disliking to different foods at their early childhood and continuous dependence on any particular taste or flavor or type of food may pave way to nutritional disorders in the future. Though the both types of diet i.e, vegetarian and non-vegetarian have its own merits and demerits, it can be made healthy if properly

planned, including a variety of foods and are consistent with dietary guidelines.

Classification

Diet patterns may be broadly categorized as vegetarian or non-vegetarian on the basis of exclusion or inclusion of eggs, fish, meat and poultry. Further vegetarians can be classified into fruitarians, vegans, lacto vegetarians and lacto-ovo-vegetarians. A lacto-ovo-vegetarian diet is the most popular and based on grains, vegetables, fruits, legumes, seeds, nuts, dairy products and eggs but contain no meat, fish or poultry. A vegan diet is similar to the above but also excludes dairy products, egg and other animal products. It is one of the most restrictive vegetarian diets. An omnivorous diet refers to the intake of all type of food including vegetarian and non-vegetarian. Semi vegetarian may refer to a person who limits the amount rather than the type of flesh foods consumed. The table given below depicts a short comparison of omnivores and vegetarian diets.[2]

	Foods consumed						
	Beef, red meat	**Poultry**	**Fish, other sea food**	**Eggs**	**Milk & dairy products**	**Grains, vegetable**	**Fruits, nuts**
Omnivore	.	.	.	.	.	.	.
Semi-vegetarian		.	.	.	.	.	.
Pollo-vegetarian		.		.	.	.	.
Pesco-vegetarian			.	.	.	.	.
Lacto-ovo-vegetarian				.	.	.	.
Lacto-vegetarian					.	.	.
Ovo-vegetarian				.		.	.
Vegan						.	.
Fruitarian							.

Ahara Vargas

The classification of dietetic foods and drinks into 12 groups is described in CharakaSamhita. They are as follows: Shukadhanya (Corn with bristles), Sami dhanya (pulses),Mamsa (meat), Shaka (Vegetables), Phala (fruits), Harita (salads), Madya (wine), Gorasa (milk), Ambu (water), Ikshuvikara (sugarcane products), kritanna (food preparations) and aharayogin (accessory food articles).[3] Whereas, Susrutacharya have classified the food groups into 21 categories.[4] The Dhanya Vargaare mainly of two types i.e, Shook Dhanya and Shimbi Dhanya. The cereals which are monocotyledon comes under Shook Dhanya while those dicotyledonis in Shimbi Dhanya Varga. Shook Dhanya includes different varieties of rice, usually they are Madhura in rasa and vipaka and sheetaveerya. Charaka remarks that shashtika rice is cold in potency, unctuous, light, sweet, tridoshahara and stabilizing.[5] Cereals contain carbohydrate and starch in plenty but fat, proteins, vitamins and minerals in small quantity. Polished or super boiled rice with more water are mainly devoid of the vitamins and minerals. The use of this type of rice causes beriberi due to lack of its vitamin contents. The old stocked rice causes epidemic dropsy. Rice should not be taken alone, as it cannot meet the nutritional requirements. It should be taken with pulses and ghee. Kichdi, the preparation of cereals with pulses mixed with ghee and spices is highly wholesome and healthy.[6] The samidhanya (pulses) include mudga, vanamudga, kalaya, makushta, masura, chanaka, adhaki, harenu etc. They are generally sheeta and katu in vipaka and have madhura and kashaya rasa.[7] Mudga (green gram) is the best among all the species and it do not excessively aggravate vata in the system. Masha (black gram) is heavy and ushna and therefore considered unwholesome.[8] The pulses due to the presence of protein and mineral contents, are very useful for the growth of human beings. The English people regard the pulses as the poor mans' beef as it provides protein requirements of the body.

Charaka has classified the mamsa into prasaha (animals/birds who take the food by snatching), bhumisheya (those residing in burrows or underground), anupa (residing in marshy land), varisheya (residing oin water), varichara (whichmove on water), jangala (residing in dryland and forest), vishkira (animals which disperse food before taking) and pratuda (those which strike at the food before taking). According to Charaka, aajamamsa is neither too cold in potency nor too heavy and unctuous. Kukkutamamsa is snigdha, ushnaveerya, vrishya and brihmana.[9] While considering the qualities and usefulness of diet containing non vegetarian origin, Ayurveda has contraindicated the use of certain types of meat for the sake of health, it is advisable to avoid. Such are dried or putrified flesh; the fleshofa diseased or emaciated, old, poisoned, snake bitten animals, the animalswhich are extremely tender or struckwith a poisoned dart or weapon or that which has fed an unnaturalfood.[10]

Ayurveda recognizes all the green vegetables under the heading of shaakavarga. The attributed qualities and biological responses of these green vegetables are based on panchabhoutika composition and their predominances in it. Among all shaakas, vastuka, meghanaada, nidrakari, punarnava are considered as best useful. According to Susrutha, the species called vastuka is pungent (katu) indigestion, vermifuge and tonic. It improves intellect and digestion, alkaline, laxative, and tends to reduce all deranged doshas in the body. The species sunisannaka is easily digestable.[11]

Vegetarian Nutrition

There is a common misconception that vegetarian diet is completely healthy and it meets all the nutritive requirements of human body. But unless it is well planned, it can lead to various types of deficiency diseases. Generally, vegetarian refers to lacto-vegetarian. They are always considered as the cheaper sources of food. The cereals, pulses, legumes, vegetables, milk products etc are easily available and economical and thus has become a part of the daily Indian diet. Bhagavatgita have classified the ahara in three ways viz, satwika, rajasika and tamasikaahara. The vegetarian sources are obtained from the plants directly and not by harming any organisms, thus it attributes to the satwaguna of the ahara. The consumption of vegan diet enhancessatwaguna in a person too.

Fats: Edible plant foods have a low content of fat and saturated fatty acids but they are good source of monounsaturated fatty acids and poly-unsaturated fatty acids. In most cereals, millets, pulses and legumes, fat content ranges between 1.5 to 3 per cent. In cereals, millets and most oil seeds, linoleic acid is the major fatty acid whereas pulses, legumes, green leafy vegetables and some oil seeds (e.g. soyabean, rapeseed/mustard and flaxseed) and fenugreek are good sources of both linoleic acid and alpha-linolenic acid. Linoleic acid is abundantly found in vegetable oils. Diets rich in EFA are able to reduce serum cholesterol and low-density lipoproteins. Epidemiological studies indicate that LDL and VLDL fractions are atherogenic and HDL exerts a protective effect against the development of artherosclerosis. There is evidence indicating an inverse relationship between EFA intake and CHD mortality.[12]

Dietary fibre: Dietary fibre is the remnants of the edible part of plants that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the human large intestine. It helps in weight reduction, gall stones, CHD, hypertension, bowel diseases etc.[13]

Vitamin A: The cheapest source of vitamin A isgreen leafy vegetables such as spinach and amaranth which are found in great abundance in nature throughout the year. The darker the green leaves, the higher its carotene content. Vitamin A also occurs in most green and yellow fruits and vegetables (e.g., papaya, mango, pumpkin) and in some roots (e.g., carrots). The most important carotenoid is beta carotene which has the highest vitamin A activity. Carotenes are converted to vitamin A in the small intestine.[14]

Vitamin C: The main dietary sources of vitamin C are fresh fruits and green leafy vegetables. Traces of vitamin C occur in fresh meat and fish but scarcely in cereals. Germinating pulses contain good amounts. Roots and tubers contain small amounts. Indian gooseberry is one of the richest sources of vitamin C both in the fresh as well as in the dry condition. Guavas are another cheap but rich source of this vitamin. Vitamin C is a potent antioxidant and has an important role to play in tissue oxidation. It is needed for the formation of collagen, which accounts for 25 per cent of total body protein.[15]

Plant proteins: From nutritional point of view, plant proteins are inferior in quality to animal proteins as they are biologically incomplete. But combination of plants and cereals may complement each other and act as beneficial. Cereal proteins are deficient in lysine and threonine; and pulse proteins in methionine. These are known as "limiting" amino acids. When two or more of vegetarian foods are eaten together (as for example, rice-dhal combination in India} their proteins supplement one another and provide a protein comparable to animal protein in respect of EAA. Thus with proper planning, it is possible for a vegetarian to obtain a high grade protein, at low cost, from mixed diets of cereals, pulses and vegetables. This is known as supplementary action of proteins, and is the basis of counselling people to eat mixed diets.[16]

Vitamin D: Vitamin D is found in animal origin food, but the vegans does not face the deficiency of vitamin D in the body as it can be synthesized in the body by a daily 5 minutes exposure to the sunlight.[17]

n-3 Fatty acids: Plant foods contain a-linolenic acid but they lack the long-chain n-3 fatty acids EPA and DHA. Studies of plasma levels of n-3 fatty acids have consistently shown that vegetarians have lower levels of EPA and DHA than non-vegetarians with lower levels in vegans than in lacto-ovo-vegetarians.[18]

Vitamin B_{12}: Food plants do not contain vitamin B_{12}; therefore, the only reliable sources of vitamin B_{12} for vegetarians are dairy products and eggs, fortified foods and dietary supplements.[19]

Iron: The Fe content of vegetarian diets is typically quite similar to that of non-vegetarian diets, but the bioavailability of the Fe is lower due to the presence of phytates, oxalates, carbonates, dietary fibre, and phosphates which interfere in iron absorption. Vegan diets are usually higher in Fe than lacto-vegetarian diets because dairy products are low in Fe.[20]

Zinc: The bioavailability of zinc from vegetarian sources may also be low owing to the presence of phytates and other substances in plant foods that inhibit zinc absorption. Health consequences of Zinc deficiency include growth retardation, male hypogonadism, changes in taste acuity, delayed wound healing, decreased immunity and improved cognitive functions.[21]

Non-Vegetarian Diet

Non vegetarian foods are easily available and cheap depending upon the geography of the area. The coastal regions of India can enjoy a wider range of sea foods and various choices in the non-vegetarian foods. Basically,

the meat products are heavy in nature because of its high fat content making it heavy for digestion. Consumption of excessive mamsaahara increases the quality of rajas and tamas in a person.

Proteins: From the nutritional standpoint, animal proteins are rated superior to vegetable proteins because they are "biologically complete". For example milk and egg proteins have a pattern of amino acids considered most suitable for humans. Proteins of animal origin are found in milk, meat, eggs, cheese, fish and fowl. These proteins contain all the essential amino acids (EAA) in adequate amounts. Egg proteins are considered to be the best among food proteins because of their high biological value and digestibility. They are used in nutrition studies as a "reference protein".[22]

Fats: The major sources of animal fats are ghee, butter, milk, cheese, eggs, and fat of meat and fish. Animal fats with few exceptions like cod liver oil and sardine oil are mostly saturated fats. Animal foods like butter, ghee, whole milk cream, fatty cheese and fatty meats provide cholesterol and high amount of saturated fatty acids, and are natural source of trans-fatty acids. Lean meats have a fairly high content of long chain poly-unsaturated fatty acids (PUFA). Poultry meat contains less fat and cholesterol and have high amount of PUFA including long chain PUFA. Eggs have high cholesterol but are good source of linoleic acid, alpha-linolenic acid and docosahexaenoic acid (DHA}. Fish has less fat, saturated fatty acids and cholesterol but are good source of PUFAs. A diet, rich in fat, can pose a threat to human health by encouraging obesity. In fat people, adipose tissue may increase upto 30 per cent. High fat intake (i.e., dietary fat representing. 40 per cent or over of the energy supply and containing a high proportion of saturated fats) has been identified as a major risk factor for CHD. In recent years, there has been some evidence that diets high in fat increase the risk of colon cancer and breast cancer.[23]

Vitamins: Vitamin D and B_{12} are found only in animal origin foods. Vitamin C is present mostly in vegetarian food and in minute quantities in fresh meat and fish. Only non- vegetarian diet can lead to scurvy.[24]

Minerals: Inhibitors like oxalic acid, phytates, oxalates, carbonates, phosphates and dietary fibre are not found. So absorption of calcium from animal sources and haem iron is very good compared to plant sources.[25]

CONCLUSION

According to Ayurveda, the food articles possess specific properties which are entirely dependent upon its panchabhautika composition. The action and nutritional benefits of the ahara depends upon various other factors such as place of origin, time of collection, method of processing etc. considering the modern dietetics, they have detailed the nutritional concepts on the basis of presence of carbohydrates, fats, proteins, vitamins and minerals. Both the vegetarian and non-vegetraian diet have its own pros and on nutritional point of view. Though Indians are depending more on vegetarian diet and it is wholesome for health, we cannot consider that sticking onto a complete vegan diet is good for health as it can result in Vitamin D, Vitamin B_{12} deficiencies and vice versa. One has to be judicious in mixing the food articles so that he does not suffer from any serious deficiency disorders. The better option is to depend on a lacto vegetarian diet and take fortified products.

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