



An Appraisal on Ayurvedic Diet and Dietary Intake Considerations in View of Nutrition Science

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Abstract

Now-a-days non-communicable diseases and metabolic disorders have become the major concern of health care providers and researchers. The major causes of these health problems are change in lifestyle and food behavior. Ayurveda has given great consideration to diet, dietary methods along with daily and seasonal regimens and code of conduct in health and disease. Acharya Charaka has quoted that human body and disease both are the product of nutrition. The state of health depends on diet and dietetic, faulty intake of diet results in diseased state. The person who wants to be free from different diseases should eat Hitakar Aahar (suitable diet) in adequate amount on appropriate time as per the status of digestive fire. Ayurveda has given an extensive description about Diet and Dietetics under the preview of Ashtha Aahar Vidhi Visheshayatana (eight specific factors related to method of food cooking, processing, food combinations and its intake) and Dwadasha Pravicharana (twelve rules related to method of intake of food), Viruddha Aahar (incompatible diet), Pathya (suitable), Apathya (unsuitable) diet.

All the ancient literatures related to different cultures including Ayurveda have focused on diet in maintenance of health and management of diseases. But the available dietetics literatures have not acknowledged the contribution of Ayurveda scholars. The dietetic concepts described in Ayurveda, may contribute a lot in maintenance of health and management of life style disorder. The aim of writing this article is to highlight the hidden concept of the diet and dietetics to the researchers in the field of dietetics and medicine.

Keywords: Diet, dietetic, ashtha aahar vidhi visheshayatana, dwadasha pravicharana

Introduction

Ayurveda has strongly advised that a person should never consume food out of greed or when he is unaware of what

he eats. One should knowingly and decidedly eat food. Living body is principally grown out of food; hence it is vital to test what a person is consuming¹.

Diet and nutrition are most important for health and equally important in management of disorders. The maximum nutrition disorders were identified in the 18th-19th century and after that the concept of the diet and nutrition became the area of interest for the researchers. Dietetics is the science which applies the principle of nutrition, to the planning and preparation of food and regulation of the diet in relation to both maintenance of health and treatment of diseases².

The word diet is derived from the Greek "Diaita", meaning mode of life, a word that until the last century was often used in a much broader sense than its current meaning³. Ayurveda the traditional system of India describes 'Aahar' in two meanings *i.e.* the act of food intake and for food items⁴. Whatever is eaten with mouth or ingested is called Aahar. Food has been considered as life of living beings. Thus diet is not only necessary to living long (*Annam vrittikaranam*)⁵, but also necessary for good health. Food eaten in proper amount, with all rules and regulations sustains the life, refreshes all sense organs, organs of functions along with mind, nourishes all dhatavah (tissues), increases memory, intelligence, strength, oja, provides good complexion and luster to the body⁶.

The word dietetics was noted after the recognizing the importance of dietetics in health and management of

disorder. Many association of dietetics were found all over the world for example, American Dietetic Association has defined dietetics as a profession which applies the integration and application of principles derived from the disciplines of food, nutrition, management, communication, biological, physiological, behavioral and social sciences to achieve and maintain human health^{3,7}. Dietitians supervise human nutrition, the regulation of diet, alters nutrition of patients based upon the medical condition and individual needs⁸.

All the Ayurvedic compendia has described the unique effects of diet in health as well as in diseased state thousand years ago. Acharya Charak has quoted that the state of health depends on diet and dietetic, faulty intake of diet results in diseased state. The person who wants to be free from different diseases should eat Hitakar Aahar (suitable diet) in appropriate amount on appropriate time. Ayurveda has given an extensive description about diet and dietetics under the preview of Ashtha Aahar Vidhi Visheshayatana (eight specific factors related to method of food cooking, processing, food combinations and it's intake)^{9,10} and Dwadash- Pravicharana (rules related to intake of meal)¹¹. The aim of this article is to highlight the hidden concepts of the diet and dietetics to the researchers in the field of dietetics and medicine and to explore

and analyze the dietary considerations in Ayurvedic compendia in view of scientific research and nutrition science.

Materials and Methods

A comprehensive literature search was done on the concept of Ahara, Dietetics and Ashtha Aahar Vidhi Visheshayatana from standard text books of Ayurveda and Nutrition, research articles from different online journals of standard e-database like PubMed, PubMed Central, Google Scholar, Medline and Science Direct were searched to get relevant research papers related to manuscript. The concept of dietetics and Ashtha Aahar Vidhi Visheshayatana were analyzed in view of nutrition science and scientific researches.

Specific Considerations for Diet and Dietary intake (Ashtha Aahar Vidhi Visheshayatana)^{9,10} in Ayurveda

Charaka the great physician of Ayurveda has described Ashtha Aahar Vidhi Visheshayatana means eight specific considerations regarding food and dietary intake^{9,10} which are responsible for healthy and unhealthy effects of ingested Aahar (diet) namely-

1. Prakriti (original qualities of food)
2. Karana (producing specific qualities by processing and cooking of food)
3. Samyoga (food combination)
4. Rasi (quantity)

5. Desh (place of origin of food)
6. Kala (time factor)
7. Upayoga sanstha (rules of intake)
8. Upayokta (user)

Charaka has emphasized that wise person should understand good and bad outcomes of right and wrong eating habits. One should not be tempted to eat, what is not good for his health¹². He has also advocated twelve directions (Dwadasha-Pravicharana) which must be followed while eating the food to get the proper beneficial effect of food. One should eat warm, unctuous food, not to eat too fast, not too slow, not talk, laugh while eating and eat in pleasant place with full concentration, after due consideration to the self and so on so forth^{9,10}.

In nutrition science, dietetics is described in the same way as of Ayurveda but Ayurveda has described all aspects of diet and dietetics in a very comprehensive manner. Food science describes brief note in scientific way of food, food items, nutrition, nutrients, cooking methods, preservation, processing and preparation of food, digestion, types of diet, menu planning, factors affecting meal planning, rules of taking meal, methods of flavor enhancers and others.

Food processing and preparation methods are used to enhance the bioavailability of micronutrients, improve the taste and food quality, destruction of micro-organism,

concentrate nutrients, increase antioxidant value, increase availability of nutrients, increase consumption of food, increase variety and improve digestibility.

Charak's eight specific factors to determine the utility of food are discussed in detail and are summarized briefly with the concept of diet and dietetics in nutrition science.

Ashta Aahar Vidhi Visheshayatana (Ayurveda)	Dietetics (Nutrition)
Prakriti (Nature)- Qualitative characteristic of food	Food quality, nutritive value, food composition and food classification
Karana (Sanskar)- Method of Processing / Preparation of food	Food processing and preparation methods- technological process, natural food process, mechanical food process, ultra-processed foods and culinary of food ¹³
Samyoga (Combination of two or more)- Mixing	Methods of improvement, nutritive value of food-germination, fermentation, enrichment, substitution, supplementation, fortification and so on ¹⁴
Rasi (Quantum)- Quantity of food	Balanced diet, food variety, nutritional requirement, food pyramid
Desh (Habitat)- Climate	Factors affecting diet
Kala (Disease state)- Time & Seasonal variation (stage of the disease or the age of the individual)	Meal time and meal pattern, therapeutic diet or diet therapy
Upayoga sanstha (Rules of use/eating)- Rules governing the intake of food	Rules of intake of meal
Upayokta (user)- Wholesomeness to the individual who takes it	User, habits of food consumption, food preferences

Prakriti (Nature)¹⁰

Prakriti is also known as another name like nature, swabhava, characteristics, qualities etc. It is sum of natural properties (Guru, Laghu, Sheeta, Ushna, Ruksadi) of substances used as food and drug. The quantity of food intake and its combinations (Samyoga) depends on the properties like Guru and Laghu of the food items.

Laghu and Guru Aahar

Laghu Aahar means easy in digestion and takes less time in digestion. Guru Aahar means heavy in digestion and take more time in digestion. Laghu food items are sali rice, green gram (*Vigna radiata*), meat of deer (*Cervidae*), common quail (*Coturnix coturnix*) and grey partridge (*Perdix perdix*) while guru food items are black

Heavy and Light Food - Raw and Cooked Form According to Nutrition Science

Form	Light Food (Laghu Aahar)	Heavy Food (Guru Aahar)
Raw food	Mostly food items that have energy given nutrients (fat, carbohydrate, protein) in proper or less amount and over all kilo calorie of a day is not over from daily nutrient requirement and texture is usually light, crisp, watery and easily digestible food. Example- fruits, green vegetables; cucumber, spinach, barley, pasta, onion, cabbage, tomato, pulses, peas, rice, green gram, common quail, antelope, rabbit in a required amount.	All food items that have energy given nutrients (fat, carbohydrate, protein) in high amount and over all kilo calorie high of the daily requirement and texture is usually dense, take more time to digest or difficult to digest. It also changes (heavy or light) as per disease and quantity of food. Example- meat, potato, egg, dry fruits, colocasia (arbi), mangoes, banana, sweet potato, sugarcane, milk products, black gram, meat of the aqueous animals, baked potato, cheese cake, lasagna, fettuccine alfredo, coconut cream pie, that is heavy in a required amount.
Cooked food	Chapathi without fat, toned/skimmed milk, oats, boiled rice, butter milk, khichadi, daliya, sivayi, semolina, cereals, jaggery, whole wheat, idli, dhokla, spring salad with vinaigrette, rice cake, angel hair pasta with vegetables with olive oil, brothy soup, fruit salad without heavy syrups or dressing.	White bread, rice, beans, potatoes, egg yolk, honey, curd, black gram, oily food, fast food (barger, pizza, cracks, packed food, kachori, pav bhaji), sweets, chocolates, cold/frozen food, ice cream, cold drink, large quantity of food, curd, non-vegetarian food, junk food like-sugar, starchy food, oily food.

gram (*Vigna mungo*), meat of pig (*Sus scrofa domesticus*), buffalos (*Bubalus bublis*)¹⁵.

The nutritive value of food items depends on their inherent properties and composition of food. In India, Indian Council of Medical Research (ICMR) has developed a table on the human nutrient requirements and Recommended Dietary Allowances (RDA) for Indians, based on their dietary style and composition¹⁶. Food contains six nutrients as well as other compounds i.e. fibers, phytochemicals, pigments, additives, alcohols etc., some are beneficial, some are neutral and few are harmful. The properties and nutrient present in food are affected by

many factors like 1- Minerals content of the soil, 2- Diet fed to the animal or fertilizer used on the plant, 3- Season of harvest, 4- Method of processing, 5- Length and method of storage, 6- Method of cooking, 7- Method of analysis and 8- Moisture content of the sample analysis¹⁷.

Karana (Processing)¹⁰

Karana is known as Sanskar, it refers to preparation and processing of food, transformation in properties of food. Alteration in the properties of substances can be brought by contact of water and fire, cleansing, churning, infusing, steeping and also depends on place, time, type of utensil used for cooking or processing.

In nutrition science, the purpose of processing is to make food soft, clean, suitable, durable and digestible. Now-a-days the food processing or wrong cooking methods have become the cause of many diseases because the food becomes nutritionally deficient or additive chemicals in processed food are harmful. Generally, food processing

includes thermal processing, mechanical processing, industrial processing (ultra-processed food) and technological food processing which includes methods like soaking, fermentation, fortification, enrichment, substitution, supplementation and germination/malting^{14,18,19} which is almost similar to description under Karana or Sanskara.

Food processing in Ayurveda	Food processing in Nutrition science
<p>Jalsamyoga (Water contact) - Adding water has cleaning effect and after soaking grains and cereals become Laghu (lighter in digestion).</p> <p>Kala (time)- Ayurveda has given due importance to time factor in procuring and preserving the edible things. For example</p> <ul style="list-style-type: none"> ● Honey's property changes according to season and if stored for long period. ● About one-year old ghee becomes tikta (bitter) and has medicinal value. ● Purana Guda (jaggery) has also the medicinal value. <p>Agnisamyoga (contact of fire)- e.g. Raw rice or uncooked food is difficult in digestion. After cooking it becomes lighter and easily digestible.</p>	<ul style="list-style-type: none"> ● Soaking is a food processing method that is used in passive diffusion of water-soluble Na, K, or Mg, Phytate and other nutrients and it can be reduced by decanting the water. Soaking process used in cereals and most legume flours (but not whole grains or seeds) in water^{14,20,21}. ● Iron and calcium absorption inhibits some polyphenols, tannins (legumes) and oxalates, and may also be lost by soaking¹⁴. ● Rice is heavy in inherent property after in the contact of water, water soluble nutrients are removed by decanting the water and heat, it makes soft to rice. But mostly vitamin B complex gets destroyed. <p>The property of food items cereals, fruits, vegetables also change with time and season.</p> <ul style="list-style-type: none"> ● Fresh fruits have different property from preserved or cold stored fruits. ● Old rice is good for health than new rice as it becomes lighter. <p>In the contact of fire food become soft, easily ingestible, enhance flavor and also destroy the enzyme inhibitors that present in food such as phytate, tannin etc. but overcooking and prolonged cooking reduces the nutritive value of food.</p>

<p>Manthana (churning)- Curd is heavy and Srotorodhaka (obstructs channels) but after churning, it becomes lighter and Agniwardhaka (augments digestive fire).</p>	<ul style="list-style-type: none"> ● Thermal processing can enhance the bioavailability of micronutrients like thiamine, vitamin B₆, niacin, folate, iodine and carotenoids and can reduce certain antinutritional factors (e.g. goitrogens, thiaminases)^{14,21,22}. ● Raw meat poses significant risks for food borne illness and adequate cooking is essential to ensure food safety¹³. ● Boiling of tubers and blanching of green leaves induce moderate losses (i.e. 5–15%) of phytic acid²². <p>Moist Heat- Boiling, simmering, poaching, stewing, steaming, pressure cooking.</p> <p>Dry Heat (Air and Fat as Medium)- Roasting, grilling/broiling, toasting, baking, sautéing, frying.</p> <p>Combination- braising.</p> <ul style="list-style-type: none"> ● Repeat heat: Repeating heat reduces the nutrient level and make unpalatable and destroy the flavor of food like, repetition of heat for cereals destroy amino acid (lysine). ● High flame cooking: High flame cooking can destroy flavor, color and some nutrients of food. ● Low flame cooking: Production of mutagenic compounds during meat cooking can be minimized by using low temperature and water-based cooking methods¹³. ● Reheated oil: Reheated oil creates oxidation and after intake, it may create oxidative stress which creates more free radicals. Reheated oil (corn, soya bean and sunflower) can form a toxin called 4-hydroxy-trans-2-nonenal (HNE). Consumption of HNE is associated with the risk of cardiovascular disease, stroke, Parkinson's disease, Alzheimer's disease, Huntington's disease, various liver disorder and cancer²³. <p>The mechanical processing of vegetables may help to improve the bioavailability of carotenoids by disrupting the sub-cellular membranes like fruit juices¹⁴.</p>
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<p>Shauch (cleaning)</p> <p>Desh (place)- Properties of food items also depends on soil in which it is grown or the property of meat depends on the habitat of animal also.</p> <p>Vashana (flavor)- Addition of natural dravya to add flavor.</p> <p>Bhavana (infusing)- Addition of Kwatha (decotion) of some Dravya into cooking food items to enhance its nutrient value.</p> <p>Kalaprakarsha (long duration)</p>	<p>Thorough cleaning with water removes microbes, chemicals and pesticides from green vegetables and fruits used to preserve them.</p> <p>Properties of food items depend on the soil, sun temperature, sun light and so on. The person should take seasonal vegetable, fruits and cereals. Milk, fruits, vegetable, cereals and pulses nutritive value may change according to place and season.</p> <p>Flavor enhances the acceptability of food, natural essence is good but artificial essence with different flavor made of synthetic chemical used in present time have very hazardous effects.</p> <p>Fortification is the process of adding the nutrients and non- nutrient bioactive components to the food stuffs (food, food constituent or supplements), in which nutrients naturally absent or found in less amount. Food is fortified under FDA regulation and provision. For example</p> <ul style="list-style-type: none"> ● Thiamine is not found in polished rice, deficiency of thiamine cause Beriberi disease. So, addition of thiamine in rice protect from Beriberi disease. ● Orange juice fortified by the addition of calcium²⁴. <p>The time factor has also affected the nutrient quality of food by growth of some different micro-organisms. Depending on the type of food products, nutrient can reduce or increase.</p> <ul style="list-style-type: none"> ● Most of the anti-nutritional and toxic factors are eliminated through germination. It enhances the nutrients especially vitamin B₁, B₂, B₃ and C and also carbohydrate and starch get converted into sugar¹⁴. ● The extent of reduction in higher inositol phosphate levels during fermentation varies; sometimes 90% or more of phytate can be removed by fermentation of maize, soy beans, sorghum, cassava, cocoyam, cowpeas and lima beans¹⁴.
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<p>Bhajana (utensil)- Change in property due to specific utensil material in which food is cooked, kept or stored e.g. Triphala Kalka (Paste) kept in iron pot becomes more beneficial. A person who drinks such paste along with honey and Ghrita lives for hundred years.</p>	<ul style="list-style-type: none"> ● In cereals with a high tannin content (e.g., bulrush millet and red sorghum), phytate activity is inhibited, making fermentation a less-effective phytate-reducing method for these cereal varieties¹⁴. ● Fermentation enhances the metabolic activity of micro-organism. ● Fermentation also improves palatability, tastes, protein quality, vitamin B and C content and microbiological safety and keeping quality. For example, idli paste, dosa paste, vinegar, liquor, cheese, dhokla, fermented milk etc¹⁴. <p>Utensil or pots made of various elements, materials used for cooking or to preserve have various good or bad effects to the body. For example</p> <ul style="list-style-type: none"> ● Iron Pots- cooking in iron pots increase the hemoglobin (Hb) concentration than aluminium pots. In the laboratory study, showed that total and available iron was greatest in foods after cooked in iron pots, except for available iron in legumes for which there was no difference between types of pot²⁵. ● Pressure cooking- Pressure cooking is known as energy and time conservative. Cereals should be cooked in pressure cooker. Because using open pots for cereal cooking destroyed thiamine. ● Aluminium Pots-Research studies have shown the bad effects of leaching of aluminium from cooking utensils is harmful to the body. The model suggests that in the pH range of most food (pH 4–8). Aluminium present is predominantly in the form of organic aluminium complexes, which is harmful to the human body. <p>Drinking bottles and stove-top moka pots made of aluminium have become very popular. Storing drinks in bottles and preparing coffee in a moka pot may result in the migration of aluminium to the beverage²⁶.</p>
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	<ul style="list-style-type: none"> ● Microwave- Microwave heating is known to inactivate many microorganisms, such as <i>Escherichia coli</i>, <i>Streptococcus faecalis</i>, <i>Clostridium perfringens</i>, <i>Staphylococcus aureus</i>, <i>Salmonella</i> and <i>Listeria Spp.</i> Bacterial and mold spores, as well as the bacteriophage PL-1, which is specific to <i>Lactobacillus casei</i>, have also been reported to be sensitive to microwave radiation²⁷. Pro-vitamin A losses increase from microwaving, steaming, boiling and sautéing¹⁴. Microwave is used for thawing, drying and baking food like turkey, beef, corn-soy milk, chicken, frozen foods and potatoes. ● Teflon coated pans- The effect of Specific Oil Surface (SOS) during pan frying of rapeseed oil on its thermal stability and Antioxidant Capacity (AC) was evaluated. Rapeseed oil with different Oil Layer Heights (OLH = 0.5, 1.0, 1.5, 2.0 and 2.5 cm) were heated on an electric frying pan coated with Teflon at 180 ± 10 °C until a selected end point of 25% Total Polar Compounds (TPC) was reached. The changes of chemical parameters of oil samples such as peroxide value, p-anisidine value, Totox value, Free Fatty Acids, TPC and AC using the 2,2-diphenyl-1-picrylhydrazyl assay were determined²⁸. ● Plastic pots and bottle- Many studies on plastics showed that water boiled in plastic pot, water kept in plastic pot and industrial food in plastic bags etc. is harmful to the human body causing cancer and other diseases by continuous consumption.
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In the present scenario of fast changing lifestyle and food behavior people are rushing towards the processed and ready to eat food preparations and they are ignorant about the harmful effects of method used in cooking of food, preservative

agents used in foods, vacuum packed food items, food adulteration and using injections in growth of fruits and vegetables. All these may produce harm to the body after continual consumption and makes prone for diseases such as obesity, food poisoning, lathyrism and other disorders.

Ultra Processed Food – UPF (Industrial processing)

Food classification based on the extent and purpose of industrial processing are divided into three groups, first group is unprocessed/ minimally processed food, second group is processed ingredients and third group is ultra-processed food products²⁹. Fruits, vegetables and fibers are low in ultra-processed food but higher in sodium, saturated fat and sugar. Some evidence shows, UPF is associated with the risk of overweight, obesity and markers of metabolic syndrome. The current pandemics of obesity and related chronic diseases grow day by day through increased production and consumption of industrially processed foods and drinks³⁰.

Traditional food processing and preparation method described in Ayurveda can be used to enhance nutritive value of micronutrients from plant based diet. The traditional methods are thermal processing, mechanical processing, soaking, fermentation and germination/malting that aims to increase the physico-chemical accessibility of micronutrients, decrease the content of anti-nutrients, such as phytate, or increase the content of compounds that improve bioavailability¹⁴.

Maize is the staple diet in developing countries. Phytate (myo-

inositol hexa-phosphate) is also called as zinc absorption inhibitor²⁰. The household processing (fermentation, germination and soaking) reduces the phytate content and phytate/zinc molar ratio of white maize (*Zea mays*) and improves the zinc absorption.

A research study has suggested that food classification should be on the basis of food processing and preparation rather than source of origin *i.e.* botanical or animal. Food health potential results from both nutrient density and food structure (*i.e.* the matrix effect), which may change by use of methods of the food processing and preparation. For example, cereal-based foods may be more or less refined, fractionated and recombined with added salt, sugars and fats, yielding panoply of products with very different nutritional values. NOVA food classification is used in technological process (unprocessed and minimally processed foods, processed culinary ingredients, processed foods and Ultra-processed foods)^{13,18}.

Recent studies have reported the association between daily or frequent intake of canned foods, potato chips, processed and red meats, microwave popcorn, hydrogenated oils and so on with metabolic disorders and cancer. Body's natural defense mechanism that works against foreign particles can deplete after intake of these type of foods continually³¹.

Canned food ³¹

Tomatoes are highly acidic. It can cause bisphenol-A (BPA) to leach from the lining of the can into the tomatoes themselves. Most canned goods, such as canned tomatoes, are lined with a chemical called bisphenol-A (BPA), which has been shown to genetically alter the brain cells of rats and may cause cancer in people.

Potato chips ³¹

Mostly poly packed foods are crunchy in taste. They are high in fat and calories which are responsible for weight gain. Potato and French fries contain higher levels of acrylamide, cause of carcinogen that is also found in cigarettes.

Processed and red meats ³¹

World Health Organization (WHO) classified meat in two groups; group 1- processed meat (hot dogs, sausages, bacon and most lunch meats) that is carcinogenic (colorectal cancer) to humans and group 2- red meat (all mammalian muscle meat, including beef, veal, pork, lamb, mutton and goat) that is probably carcinogenic to humans.

Microwave popcorn ³¹

Chemically-lined bag and microwave popcorn bags are lined with a chemical known as Perfluoro Octanoic Acid (PFOA) that can increase the risk of cancer (liver, bladder, kidney and testicular cancer) in humans. In

addition, a study from the University of California linked this toxin to infertility in women.

Hydrogenated oils ³¹

Hydrogenated oils (trans fats) that have been processed by creating a chemical reaction with hydrogen is to increase the shelf-life of the oil but margarine is linked to heart disease, immune system deficiency and cancer. Hence replace the hydrogenated oils with olive oil, coconut or grape seed oil in the diet is a great way to help live a healthier, happier life.

Samyoga (Combination) ¹⁰

Samyoga means combination of food substances. When two or more substances interact to each other, it makes another or new peculiarities which are not seen in individual substances. The effect of the ingestion of mixed substances may be good or bad for health. Ayurveda clearly defines Viruddha Anna or incompatible diet, certain other diet and its combinations may interrupt the metabolism of tissue, inhibit the process of formation of tissue or have the opposite property to the tissue²³.

In diet, different food items are mixed to get all the required nutrients since a single food item cannot have the entire required nutrients. Ayurveda has advised to take food having six Rasa; Madhura, Amla, Lavana, Katu, Tikta, Kashaya for proper nutrition to the body.

Ayurveda has suggested some food combinations which should not be combined together as it may produce harmful effects.

Culinary rules, a combination of food items, specific menus and what foods are served in what dish, are based on traditions and customs and are taken for granted in a given culture. Serving the wrong food or not serving the traditional trimmings with a specific dish can be experienced as destroying the whole meal³².

The foregoing discussions infer that Ayurveda has the importance of Samyoga mainly in view of wholesome and unwholesome diet and Virudha Aahar (incompatible diet). Incompatible diet produces hindrance in the process of formation and nourishment of tissues²³ Chakrapani has described 18 types “Virudha Aahar” which are as following Desha (place) virudha, kala (time) virudha, agni (digestive power) virudha, matra (quantity) virudha, satmya (wholesome) virudha, dosha

Good combination of food items	Bad combination of food items
<p>Honey and aloe vera</p> <p>In a review of 131 studies, Aloe vera and honey prevented or reduced mucositis, varying with the type of cancer and treatment. Aloe vera and honey were hepatoprotective, reduced cell proliferation and increased apoptosis in murine tumors³⁴.</p> <p>Cereals and pulses</p> <p>Vegetable source protein is not complete protein. So, the combination of cereals and pulses is used, as the nutrients deficient in cereals are obtained through pulses.</p> <p>Citrus fruit and green vegetable or meat</p> <p>Vitamin ‘C’ is helpful for the absorption of iron in gut from iron containing foods like pineapple or other citrus fruit can enhance the absorption of iron from a meal of chicken.</p> <p>Animal food and plant based diet (Inhibit Phytate)</p> <p>The combination of a small amount of animal-source foods and plant based diets is probably the best strategy to improve the content and bioavailability of micronutrients. Use of such a combination of strategies can almost completely remove phytate. This is important because phytic acid is a potent inhibitor of iron absorption, even at low concentrations²¹.</p>	<p>Honey and ghee</p> <p>Combination of equal quantity of honey and ghee, acts as poison. While individual intake of honey and ghee is beneficial for health, as likely combination of milk and fish can create leprosy disease¹⁷.</p> <p>Green tea or black tea and milk (proteins and polyphenol)</p> <p>The catechins found in green tea and black tea has beneficial effects on health and especially heart. Milk protein casein on interaction with tea flavonoid catechins, reduced the concentration of catechins which have benefits of heart²⁹.</p> <p>Milk and fruits</p> <p>It has bad impact on immune system, milk which contains lactose and certain fruits such as bananas which also contain common allergen and may aggravate asthmatic attack²⁹.</p> <p>Milk and yoghurt</p> <p>Interaction of both can precipitate milk inside the stomach that may irritate and induce vomiting²⁹.</p>

virudha, sanskar (mode of preparation) virudha, veerya (potency) virudha, kostha virudha, avastha (state of health) virudha, kram (sequence) virudha, parihara virudha, upachar (treatment) virudha, paak (cooking) virudha, samyoga (combination) virudha, hirnya virudha, sampad (richness of quality) virudha, vidhi (rules for eating) virudha²³.

Rasi (quantity)¹⁰

Rasi is taken in the sense of quantity of diet, which is observed in two ways i.e. Sarvagrha (total amount of food eaten) and Parigrha (quantity of each entity of food items consumed). Rashi is described to emphasize importance of amount of ingestion of food. Intake of Sarvagrha Aahar is fruitful for health and intake of Parigrha Aahar (Heen or Ati quantity of single food) can be a for cause diseases of malnourishment and obesity. A single food item does not have all nutrients (except mother's milk) and cannot complete the body's daily requirements in adults. Intake of single food item in the variation of time remain the cause of disease, obesity, underweight and other according to deficiency or toxicity of nutrients. Intake of single type of food item does not produce satiety also.

A balanced diet provides proper nutrition since it contains all required nutrients. Using tools such as ICMR (Indian Council of Medical Research) or NIN (National Institute of Nutrition)

Dietary Guidelines for Indians and ICMR or NIN the Food Guide Pyramid, is the best way to provide a desirable balance, without excessive intake of macronutrients, micronutrients and other beneficial components of foods.

According to Ayurveda the quantity of food depends on status of digestive fire (Aharamatra tupunaragnibala-pekshini)¹⁵. Quantity of food also depends on the type of disease and at the time of treatment of disease like diabetes, renal failure, liver disease and cardio vascular disease etc. Diverse diet is helpful to protect against chronic disease, improve health status and associated with prolonged longevity. Several dietary guidelines have emphasized the value of eating a variety of foods. Dietary modification may be used for the management of disease like iron deficiency anemia, hyperlipidemia and hypertension and diabetes.

Desh (place)¹⁰

Desh denotes to place of origin of food and the body, which consumes it. Desh Satmyata signifies that place where people are located, are habituate of that place's food and drug. Properties of food items depend on some factors like climate, temperature degree of sun light and soil in which it has been grown. These factors vary place to place, so the properties of food items differ as per season and place.

Kala (time) ¹⁰

Kala is eternally moving (Nityaga) as well as conditional (Awasthika). The conditional, one is related to stage of disease while the eternally moving, one to seasonal suitability. Ayurveda has advised that people should follow the diet regimen as per season to balance the Dosha (biological entity responsible for all bodily functions and regulations) and remain healthy. During diseased state one should choose food according to type and stage of disease. Various researches showed that diet and exercise have beneficial effects on the body and to treatment of disease known as therapeutic diet or diet therapy. It is given to the patients for the treatment of disease.

Upayoga sanstha (rules of dietetic) ¹⁰

Upayoga sanstha exhibits rules of intake of meal. It depends upon the symptoms of digested food. It is advised that one should take diet when previous taken meal has been completely

digested. All description of Aahar Vidhi comes under the Upayoga sanstha. "If every individual could be given the right amount of nourishment and exercise, not too little and not too much, the safest way to health would have been found" Hippocrates 460-377 BC³³. Children learn eating manners, not only through their own experiences but also by watching others.

Regimen of food (Ashan Vicara) ¹¹

Acharya Sushruta has also described twelve kinds (qualities) of food such as sheeta (cold), usna (hot), snigdha (unctuous fatty), ruksa (dry, fatless), drava (liquid), suska (dry, moistureless), eka kala (once a day), dvikala (twice a day), ausadhayukta (mixed with medicine), matra hina (less in quantity), dosaprasama mana (mitigating the dosas) and vrtyartha (protecting health) to sustain the health and for diseased state.

When to eat cold food- Person suffering from thirst, heat, intoxication,

Rules of taking food	Effects
Eating warm food	Warm food tastes good, augments Agni, digested quickly, pacified Vata dosha and reduces the excess of Kapha.
Eat unctuous food and oily food	Unctuous food stimulates the digestive fire, fast digestion of food, pacifies vata, nourishes the body, strengthens the sense organs, promotes strength, bring out the good complexion. Oil is necessary for the body to smooth skin and nutrients.

<p>One should eat calculated quantity of food</p>	<p>Proper quantity of diet does not aggravate dosha Vata, Pitta, Kapha, easily passes down to rectum, does not impair the power of digestion, digest easily, heavy food intake should be half of the stomach, intake of light food could be taken 2/3 part of stomach. Ayurveda has advised that one part of stomach should be filled with solid food, one part with liquid and one part should be left empty for movement of dosha Vata, Pitta, Kapha then it fetches good results.</p>
<p>Eat only when previous taken meal is digested</p>	<p>If food is taken, after digestion of previous food, then it keeps appetite good, pure erucation channels open up, unimpaired cardiac function, proper evacuation of faeces, flatus and urine, promotes longevity and growth.</p>
<p>Eat food which is not contradictory</p>	<p>Food having opposite strong qualities should be avoided to eat together. Contradictory food may generate diseases like skin disease, Visarpa, Hridaroga etc.</p>
<p>Eat in desired place with desired article</p>	<p>One does not get afflicted with factor which results in emotional strain; one should be supplemented with all accessories.</p> <p>Environment is the main factor for influencing eating behaviors. Social and cultural aspects of people's food habits, involving people's attitudes and the motives behind their food choice, have been recognized as important factor³².</p>
<p>Do not eat very fast</p>	<p>Very fast food intake may enter in wrong passage, cannot relish the taste of the food and not make out some foreign bodies if present.</p>
<p>Do not eat very slowly</p>	<p>If one eats very slowly he does not get satisfaction, eat more than required, food becomes cold, irregularly digested. Few studies have found that long duration of television viewing were associated with reduced nutritional quality and a large proportion of the foods eaten and increased energy intake in the diet of school-aged children³⁴.</p>
<p>One should not talk or laugh while eating Eat after considering oneself thoroughly</p>	<p>This vitiates dosha.</p> <p>One should eat in prescribed manner, after considering the suitability for oneself. The knowledge of usefulness of food and suitability is very important to remain healthy.</p>

burning sensation, bleeding disorder, poison, fainting and emaciated from copulation should be given cold food.

When to eat hot food- Those suffering from diseases produced by kapha and vata, who have had

purgations, who are to drink fats (as oleation therapy) and who are moisture-free in their body should be treated with hot foods.

When to eat unctuous (snigdha) food- Person who are of Vata Prakriti (nervine constitution), dry in the body, exhausted by copulation, who do more physical exercises (activities) should be treated with unctuous (fatty) foods.

When to eat dry (ruksha) food- Those who have more of fat accumulation in their body, who are unctuous, those suffering from diabetes, who have more of kapha in the body should be treated with dry foods.

When to eat liquid (drava) food- Person who are having dryness of the body, suffering from thirst and debility should be treated with liquid foods.

When to take less liquid (drava) food- Those who have more moisture in their body, who are wounded and suffering from diabetes should be treated with less fluid and solid foods.

When to eat once a day- Food should be given once a day in order to augment digestive fire which is weak.

When to eat twice a day- Those who have normal digestive fire, food may be given twice a day.

When to add medicine with food - For those who hate medicines, food should be given mixed with medicine.

When to eat less quantity of food- For those who have weak digestive fire and who are sick, giving them less quantity of food is ideal.

When to eat pacify dosha- As bodily dosha varies as per seasons and gets vitiated one has to follow the diet prescribed in seasonal regimen for dosha prashaman (pacify).

Diet for normal person- All foods consumed by the healthy person is meant to maintain health and life. All the above conditions are true for any normal person. Considering these twelve aspects ingestion of food should be planned.

Upayokta (user) ¹⁰

Upayokta is called as user, which means whoever consumes food. User is mainly responsible for the wholesomeness or unwholesomeness by the habitual intake of thing (okasatmya). Charaka has strongly advised that a person should never consume food out of greed or when he is unaware of what he eats. By no means should be tempted to eat, what is not good for health¹⁰.

Most of the people in present time are unaware about dietetics and manner of cooking, eating, serving etc and have unhealthy eating habits. People generally focus only on the delicious taste, flavor and eating of the foods. They eat only for satiety of their

appetite and do not consider the harmful effects of poly packing foods and ready to eat foods with preservatives.

A study on “The way America eats is killing us”³⁵ has given the remark as unhealthy eaters to Americans. A new American Diet Report Card confirms, they eat too much cheese, sugar, starch and red meat and does not eat enough fruits and vegetables. About 500 calories per day consumed extra may be cause for obesity and diabetes etc.

Most people, experts seem to agree that eating habits in general population are unhealthy, with too many calories and too many high-calorie foods worldwide³⁶. High consumption of ready-to-consume food products in general, is a cause of weight gain, obesity and associated disorders and disease³⁷. Thus by incorporating the Ayurvedic dietary considerations in nutrition science and educating the population to adopt the guidelines described in Ayurveda, diseases can be prevented. Similarly, in management of disorders better results could be obtained by modification of dietary habits and daily practices of food.

Conclusion

The above discussion elucidate that the concept of diet and dietetics was

very well described by Ayurvedic scholars. They have given great importance to diet and dietetics in nutrition, maintenance of health as well as in causation and management of diseases. The harmful effects of faulty intake of food have also been described. Food eaten in proper amount, with all rules and regulations sustains the life, refreshes all sense organs, motor organs along with mind, nourishes all dhatavah (tissues), increases memory, intelligence, strength, oja, provides good complexion and luster to the body.

Traditional food processing and preparation methods described under Ashtha Aahar Vidhi Visheshayatana (Eight Specific Considerations for diet and dietary intake) can be used to enhance nutritive value of nutrients in diet and to avoid the harmful effect of diet due to wrong processing and faulty food intake methods.

The dietary considerations described in Ayurveda may be applied in the field of nutrition science and medicine for welfare of human beings. Scientific studies could be done on Ashtha Aahar Vidhi Visheshayatana (eight specific considerations for diet and dietary intake) and Dwadash-Pravicharana (rules related to intake of meal).

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