APPLICATION OF NUTRITIONAL FOOD FOR SUSTAINABLE FUTURE

Abstract

Sustainable food refers to food production, distribution, and consumption practices that aim to meet the current needs of the population while ensuring the long-term health and viability of the environment, society, and economy. It is a comprehensive approach that considers the ecological, social, and economic impacts of the entire food system.

Ayurveda, an ancient system of medicine from India, emphasizes the importance of balance and harmony in all aspects of life, including diet and nutrition. Creating a sustainable food future with *Ayurveda* can be a holistic approach that not only supports the health and well-being of individuals but also promotes environmental balance and ethical practices in food production.

The key principles and practices that can contribute to a sustainable food future with *Ayurveda* are discussed below.

Keywords: Nutritional food, diet, ayurveda

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I. SEASONAL DIETETICS AND LOCAL EATING

The external environment has a significant impact on the body. External and endogenous rhythms have phase relationships with one another, which means they interact and synchronize. Digestive fire (*Agnibala*)and body strength (*Dehabala*)vary in accordance with the season. If the body is unable to adapt to stressors owing to changes in different seasons, it may result in an alteration in the body's core bio-elements (*Vata*, *Pitta*, and *Kapha*), making the body highly prone to various illnesses.[1]

The serum level of various biochemical parameters like thyroid hormone and lipid parameters varies according to the season which shows seasonal variation in metabolism.[2] To regulate these variations within the physiological limit and to regulate the internal clock with exogenous factors, several guidelines, and regimens concerning diet in order to acclimatize seasonal enforcement without disrupting the bodily balance in different seasons are described in *Ayurveda*.

II. CLASSIFICATION OF SEASON

The year (*Samvatsara*) is divided into two periods depending on the direction of the movement of the sun that is northern solstice (*Uttarayana*) and southern solstice (*Dakshinayana*). Each solstice consists of three seasons shown in Figure 1.

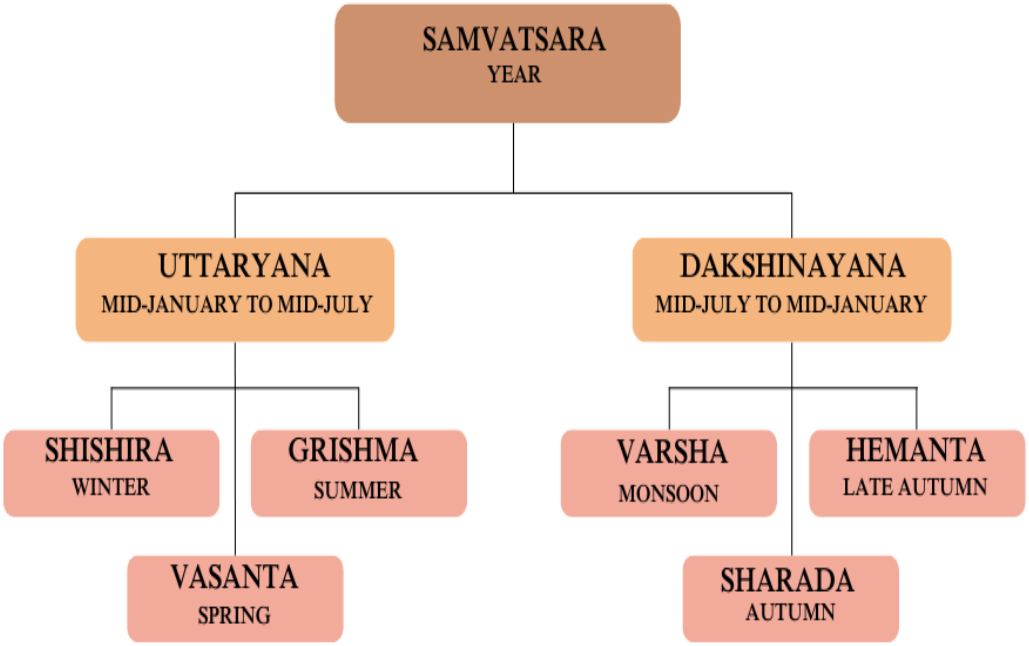


Figure 1: Classification of Sesason

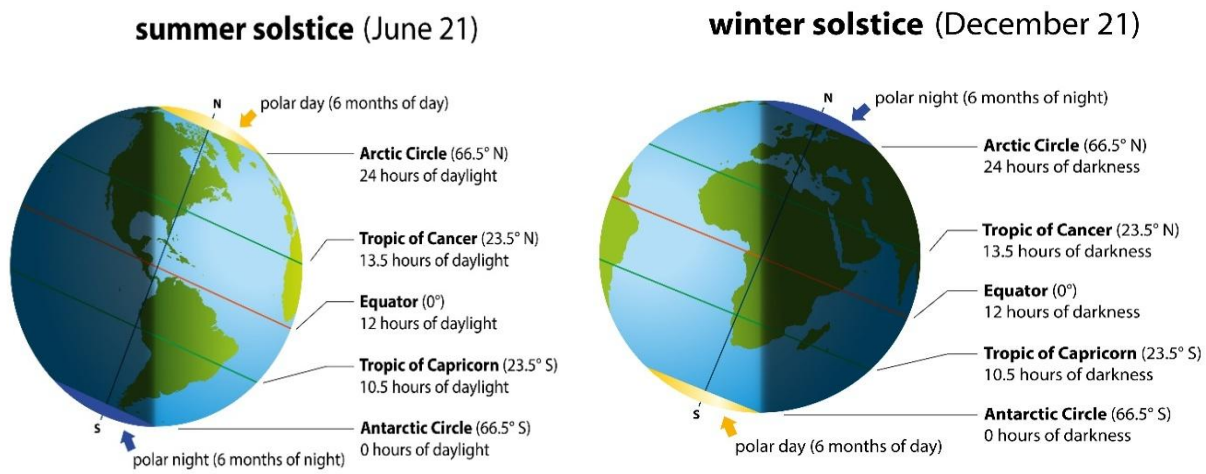


Figure 2: Northern Solstice and Southern Solstice
Source: Summer Solstice 2024 and the First Day of Summer: Facts and Folklore - Farmers' Almanac - Plan Your Day. Grow Your Life. (farmersalmanac.com)

NORTHERN SOLSTICE

Northern solstice (*Uttarayana*) indicates the northward movement of the sun which can be compared with the gradual movement of the earth around the sun to the position where the rays of the sun fall perpendicularly at the 30-degree meridian of the North Pole on June 21st every year. *Tikta* (bitter), *Kashaya* (astringent), and *Katu* (pungent) *Rasa* (taste) increases in the northern solstice which reduces the strength of a person. It is also called *Adana Kala*.

SOUTHERN SOLSTICE

Southern Solstice (*Dakshinayana*) indicates movement of the sun in the southern direction which can be compared with the gradual movement of the earth around the sun to the position, in which the rays of the sun fall over 30-degree meridian of the South Pole perpendicularly on December 21st every year. *Amla* (sour), *Lavana* (salty), and *Madhura* (sweet) *Rasa* increases in the southern solstice which enhances the strength of person. It is also called *Visarga Kala*.

III. DIET REGIMEN OF *SHISHIRA* (MID-JANUARY TO MID-MARCH)

TO EAT

Coarse cereals such as *Jowar* (sorghum), *Bajra* (pearl millet), *Ragi* (finger millet), barley, quinoa, amaranth, wheat products, new rice, *Masha* (black gram),corn, root vegetables like carrots, turnips, and beets, cruciferous vegetables such as cauliflower, cabbage, kale, broccoli, citrus fruits such as oranges and grapes, apples, pears, pomegranates, cranberries, fish such as salmon and trout, and dairy products.

1. **To Avoid**: As the weather is already cold during *Shishira Ritu*, it is best to avoid consuming *Laghu* (light), and *Shita* (cold) foods and foods having *Katu* (pungent), *Tikta* (bitter), *Kashaya* (astringent) predominant *Rasa*.

IV. DIET REGIMEN OF *VASANTA* (MID-MARCH TO MID-MAY)

1. **To Eat**: Food having *Tikta* (bitter), *Katu* (pungent), and *Kashaya* (astringent) predominant *Rasa*, wheat, and barley products, *Sidhu* and *Madhvika* (types of wine preparations), *Mudga* (green gram), leafy vegetables such as spinach, *Methi* (fenugreek), *Sarson* (mustard greens), and *Chaulai* (amaranth), fruits such as mangoes, strawberries, guavas, pineapples, and lychees, cucumber, radish, asparagus, green peas, and honey.
2. **To AVOID**: *Shita* (cold), *Snigdha* (viscous), *Guru* (heavy), *Amla* (sour), *Madhura* (sweet) food items, canned & processed food, stale food, excessive dairy products, caffeinated and sugary beverages.

V. DIET REGIMEN OF *GRISHMA* (MID-MAY TO MID-JULY)

1. **To Eat**: *Saktu* (roasted barley flour) products, ghee, and milk with *Shali* rice, leafy greens like lettuce, and spinach, *Karela* (bitter gourd), *Padwal* (snake gourd), bottle gourd, water-rich fruits like watermelon, cucumber, melons, oranges, and sweet lime, cold and sweet *Mantha* (mashed fruit juice), *Rasala* (curd churned and added with sugar and pepper) and *Shadava* (juice prepared with various fruits), natural electrolyte-rich beverage like coconut water, aloe vera juice, buttermilk.

2. **To Avoid**: Alcoholic beverages should not be consumed or diluted with plenty of water, food with *Katu* (pungent) and *Amla* (sour) taste, and *Ushna* (warm) foods.

VI. DIET REGIMEN OF *VARSHA* (MID-JULY TO MID-SEPTEMBER)

1. **TO EAT**: Food with *Amla* (sour), *Lavana* (salty) taste, and unctuous food, old barley, wheat, and *Shali* rice, *Yusha* (soup), lightly steamed or sauteed vegetables, bitter vegetables like *Karela* (bitter gourd), etc., ginger, garlic, turmeric, boiled water, *Madhvika* and *Arista* (fermented beverage preparations), and water mixed with little honey, other food, and drink processed with honey to pacify moisture accumulated in the rainy season.

2. **TO AVOID**: *Udamantha* (a beverage prepared with corn flour and ghee), raw and uncooked food, and fried & oily food.

VII. DIET REGIMEN OF *SHARADA* (MID-SEPTEMBER TO MID-NOVEMBER)

1. **To Eat**: Food and drinks having *Madhura* (sweet) and *Tikta* (bitter) taste, *Laghu* (light to digest), *Shita* (cold), and *Pitta*-alleviating properties, *Shali* rice, barley, and wheat, medicated ghee with *Tikta* (bitter) herbs.

2. **To Avoid**: Muscle fat and oil, curd, and *Kshara* (alkaline preparations).

VIII. DIET REGIMEN OF *HEMANTA* (MID-NOVEMBER TO MID-JANUARY)

1. **To Eat**: Foods having *Amla* (sour), and *Lavana* (salty) in taste, and unctuous properties should be consumed predominantly, new rice, flour preparations, *Masha* (black gram), *Tila* (sesame), *Madira* (wine preparations), *Sidhu* (a fermented beverage prepared with ripened fruit), honey, milk products, sugarcane products, warm water, various meat preparations, fats, and oil.

2. **To Avoid**: *Laghu* (light to digest), *Shita* (cold), *Ruksha* (dry), and other *Vata*-vitiating food, *Yavagu* (gruel), and eating in less quantity.

IX. KEY ADVANTAGES OF EATING SEASONAL FOOD

1. **Nutritional Value:** In contrast to out-of-season food that may have been harvested early or carried great distances, seasonal foods are often harvested at their peak of ripeness, which means they contain higher quantities of vitamins, minerals, and antioxidants.

2. **Environmental Sustainability:** Eating seasonal food reduces the need for long-distance transportation, which in turn lowers the carbon footprint associated with food production.

3. **Boost to Economy**: Choosing seasonal foods supports local farmers and agricultural communities. This helps to boost the local economy. When produce is in season and abundant, its prices tend to be lower due to reduced transportation costs and increased supply. This makes seasonal foods more affordable for consumers.

4. **Adaptation to Climate:** Seasonal foods are often naturally suited to the climate of that time of year. For instance, cooling fruits in the summer and warming root vegetables in the winter can help regulate body temperature. Eating in harmony with the seasons allows us to connect more closely with the natural cycles of the environment.

X. VIRUDDHAAHARA (DIETETIC INCOMPATIBILITIES)

Foods that have the opposite properties as that of body tissues affect body constituents or may have unwanted effects on them are known as incompatible foods. The concept of incompatible foods refers to combinations of foods that are considered difficult to digest, can create "*Ama*" (toxins) in the body, or can lead to imbalances in the doshas (*Vata, Pitta, Kapha*).

XI. VARIOUS ASPECTS OF VIRUDDHA AHARA

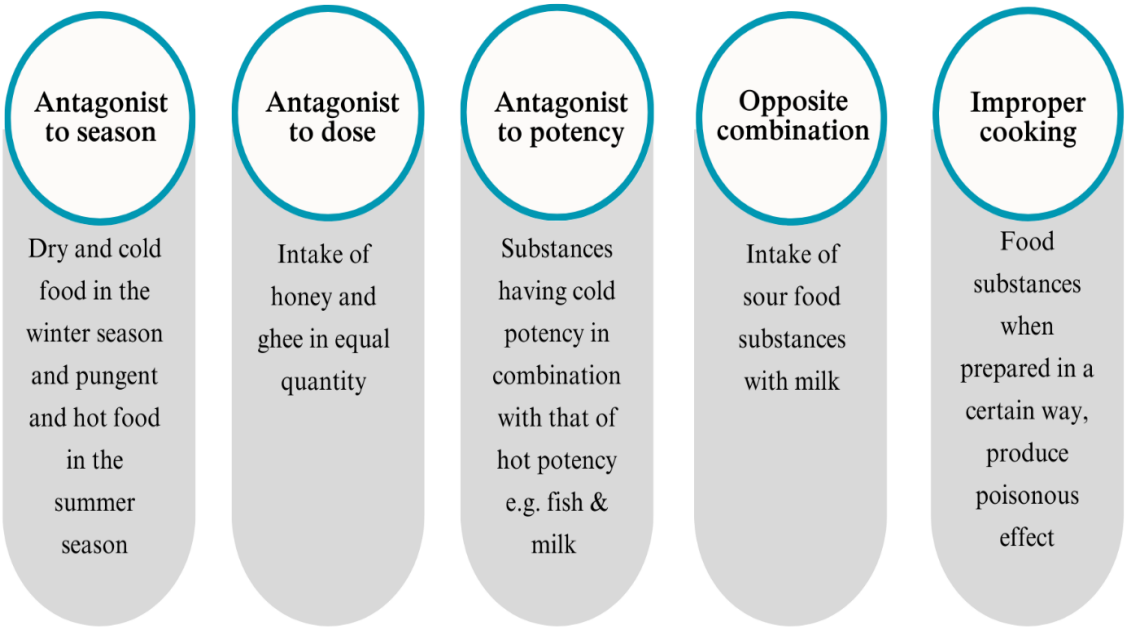


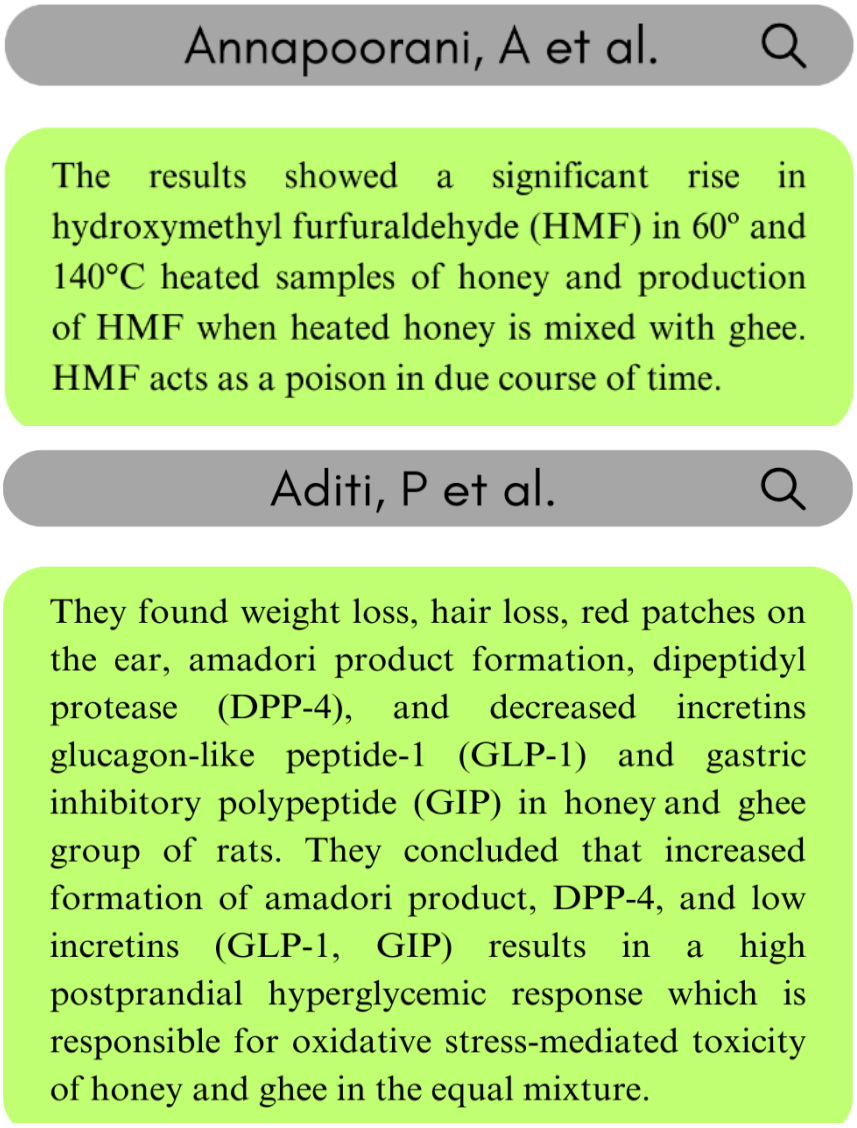
Figure 3: Incompatibilities with respect to season, dose, potency, combination, and improper cooking

XII. EXAMPLES OF INCOMPATIBLE FOOD FROM EVERYDAY POPULAR FOOD

Specific food combinations may have deleterious effects on the body which can be seen in various preclinical trials. It is stated in the *Ayurvedic* text that honey and ghee should not be taken in equal quantity and is considered as *Matra Viruddha* (dose incompatibility).

XIII. STUDIES SUPPORTING THE CONCEPT OF VIRUDDHA AHARA

- A study on the physicochemical characteristics of heated honey, honey mixed with ghee, and their food consumption pattern by Wistar rats.[3]
- A study on the toxicity profile of honey and ghee in equal ratios in rats.[4]



Another well-known example noted from the classical text is that of the antagonism of milk and fish as both have opposite potencies. Milk is cold in potency whereas fish is hot in potency and thus this combination is responsible for food poisoning and inflammatory bowel disease to skin disorders like dermatitis and psoriasis.[5]

The combination of milk and salt is contradictory but how often is that everyone likes to have white sauce pasta? This fact highlights the importance that one should not consume salty snacks with milk and prohibits the use of salt in the preparation of cream sauces. Our favorite milkshake is contradictory as milk is strictly contradictory with sour fruits. It is seen that asthma attacks can be worsened by milk that includes lactogen and by fruits like bananas which also contain common allergens.[6]

When the body expends excess energy on digesting incompatible foods, it makes a person feel fatigued and lethargic. Choosing compatible foods conserves energy for other bodily functions and helps to maintain a balanced gut microbiome and prevent digestive disturbances.

XIV. CONCLUSION

By making sustainable food choices, individuals can contribute to their own well-being while also playing a role in the preservation of the planet's resources and ecosystems. It is important to be informed about sustainable food practices, support local and ethical food producers, and make conscious decisions that align with both personal health and environmental sustainability.

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