



Understanding Of Concept Of Viruddhahara (Incompatible Food) In The Light Of Conventional Science

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<i>Abstract</i>	
	<p>Food incompatibility (<i>Virudhaahar</i>) is described elaborately in Ayurveda health science. Various types of food incompatibilities with the examples of combination are mentioned in the Ayurveda literatures like in Charaka Samhita and Susruta Samhita but these type of food combinations are not practiced in today's era. Today with the change in lifestyle, food processing methods and the combination of food articles are also modified. So, there is a need to review and identify new food incompatibilities, which are currently practiced as per Ayurvedic perspectives. Such food combinations can prove harmful, which may be imparting its untoward effects on the immune system, cellular metabolism, hormone secretions, and hence, the need to acknowledge this health issue arise. The unwanted effect of wrong combinations of food is not limited up to gastrointestinal tract only but may hamper the major systems of the body as well. Thereby, unwanted side effects can emerge inside the body when two or more types of foods are consumed together. This review article is an endeavour to compile and critically analyse the researches reporting the incompatible food effects with their probable pathogenesis and to identify new food incompatibilities, which are currently practiced.</p>
CC License CC-BY-NC-SA 4.0	Keywords: <i>Viruddha ahara, Food incompatibility.</i>

Background

Food incompatibility (*Virudhaahar*) is described elaborately in Ayurveda health science. The concept of incompatibility is discussed in contemporary dietetic science under the domain of diet - drug incompatibility, nutrient - nutrient incompatibility, food allergies / food intolerance and food poisoning.ⁱ

Eighteen types of food incompatibilities with the examples of combination are mentioned in, Charaka Samhita, and other Ayurvedic literatures but these type of food combinations are not practiced in today's era. Today with the change in lifestyle, food processing methods and the combination of food articles are also modified. So, there is a need to review and identify new food incompatibilities, which are currently practiced as per Ayurvedic perspective. These food incompatibilities can also be categorized into *Desha Viruddha*, *Krama Viruddha*, *Veerya Viruddha*, and so on. Such food combinations can prove harmful, which may be imparting its untoward effects on the immune system, cellular metabolism, hormone secretions and hence a need to acknowledge this health issue arise. This review article is an endeavour to compile and critically

analyse the researches reporting the incompatible food effects with their probable pathogenesis and to identify new food incompatibilities, which are currently practiced.

Aim and Objective

To compile and critically analyse the researches reporting the incompatible food effects with their probable pathogenesis and to identify new food incompatibilities, which are currently practiced.

Methods

The researches literature was compiled from various available online and offline data bases like Charak Samhita, Sushruta Samhita, Astanga Samgraha, Astanga Hridaya, Research articles, and other allied literature. The collected data was systematically organised, critically analysed to draw results and discussed to derive appropriate conclusion.

Results

A new branch called topography (a science related to combination of food) is emerging, which tells about the combination of basic categories of foodⁱⁱ. As per this science, proteins must not get combined with starch or carbohydrates and recommended to consumed differently^{iii.v}. The rationale behind is, starches require an alkali medium and the amylase in saliva contains an enzyme ptyalin which breaks down starch into maltose. The process continues in the small intestine, where more amylase further breaks down the maltose into simple glucose, fructose, and galactose. These are absorbed into the bloodstream, and taken to the liver, which dispenses the energy. The digestion of protein entails breaking the complex molecules first in peptides, each having a number of amino acids and second into individual amino acids, Protease (secreted by pancreas) and pepsins secreted by the stomach in presence of that breaks down protein (proteolysis). Consuming proteins and carbohydrate together will result in absorption of one being delayed by the other^{iv}. Similarly, eating sugars and acid fruits hinder the action of ptyalin and pepsin, reducing the secretion of saliva, and delaying digestion. If insufficient amylase is present in the mouth, starch will not be digested at all in the stomach, instead clogging up the works until amylase in the small intestine can get to work on it.^v Fats impede the secretion of digestive juices, and reduce the amount of pepsin and hydrochloric acid, so they should be avoided or used sparingly with protein-rich foods.^{vi} The unwanted effect of wrong combinations of food is not limited up to gastrointestinal tract only but may hamper the major systems of the body. Thus, unwanted side effects can emerge inside the body when two or more types of foods are consumed together.^{vii}

Evidence from reported research studies

The literature review revealed that many studies have been validated the harmful effect on health resulting from consumption of incompatible food (*Viruddha Ahara*), some of them are given below:

- In an experimental study conducted in rats, it was found that when honey and ghee was given in equal ratio, there was increased formation of hydroxymethyl furfural, Amadori product, DPP-4 activity and low incretins (GLP-1, GIP-1) activity resulting high postprandial hyperglycemic response which was responsible for oxidative stress mediated toxicity. This toxicity may be responsible for weight and hair loss as well as the appearance of red patches on ears during the intake of mixture of honey and ghee in equal ratio.^{viii}(*Matra viruddha*)
- Another study shows that a toxin called 4-hydroxy-trans-2-nonenal (HNE) forms when cooking oils like corn, soyabean, and sunflower oils are reheated. There seems to be an influence of 4-HNE on the health of cells. HNE has been linked in the pathology of several neurodegenerative diseases such as Alzheimer's disease, cataract, atherosclerosis, and cancer.^{ix} (method of preparation (reheating/same oil for frying) – (*Sanskar viruddha*).
- A study on fast food and commercially baked food was conducted, in which a cohort study was done. In this study, it was found that there is potentially detrimental association between the consumption of fast food or commercial baked goods and the risk of depression.^x So, from this study, it may be interpreted that *Viruddha Ahara* not only affects the person physically but also psychologically. (*Sampat Viruddha/ Samskara viruddha*)
- A study was conducted on deep frying of foodstuff such as French fries or deep fried potatoes in which a carcinogenic substance called Acrylamide was formed when the food stuff is reheated.^{xi} There is also some evidence of Genotoxicity of heat-processed foods due to formation of cooked food toxicants acrylamide, heterocyclic amines, nitrosamines and polyaromatic hydrocarbons.^{xii} So, it indicates

that cooking conditions and dietary habits can contribute to increased risk of human cancer through the ingestion of genotoxic compounds from heat-processed foods. (*Sanskara Viruddha*)

- Unhealthy combinations - Combining high protein with high carbohydrate. Eg: Banana with milk. Digestion process of carbohydrates and proteins are very much different, when consumed together interfere with one another digestion process. Being a protein, milk takes a longer time to digest, the action of hydrochloric acid in the stomach causes the milk to curdle. For this reason, Ayurveda advises to avoid taking combination of milk and fruits.^{xiii} (*Sanyoga viruddha*)
- Deep frying of Vegetables in oil - Deep frying of potatoes can develop toxic substances, such as acrylamide, which can prove to be carcinogenic.^{xiv} (*Sanskara Viruddha*)
- Regular consumption of Fast Food/Junk food. Fast food is high in energy density and low in essential micronutrient density specially Zn. Zn deficiency, enhances the oxidative stress and inflammation in testicular tissue leading to underdevelopment of testis and decreased testosterone levels. ^{xv} (*Sanskara and Sampat Viruddha*)
- High Temperature Cooking - Grains, Vegetables, Fruits, and other food materials containing protein when heated up to the stage of browning leads to formation of AGEs (Advanced Glycation End product) which damage the functioning of biomolecules and causes aging. ^{xvi} (*Sanskara/ Paka viruddha*)

From the above mentioned studies, it is clearly demonstrated that *Viruddha Ahara* may lead to several neurodegenerative, psychological and metabolic diseases. Apart from all the biochemical effect on the body, if consumed *Ahara* is not liked by the person may lead to improper digestion of food.^{xvii}

Incompatible food cause of molecular inflammation

Viruddha ahara (incompatible food) causes constant inflammation at molecular level, disturbing the eicosanoid pathway creating more arachidonic acid production which in turn lead to increased prostaglandin-2 and thromboxane. This inflammatory effect is persistent leading to oxidative stress generating free radicles and causes number of metabolic disorders^{xviii}.

Effect on Immune System:

Certain specific food combinations may have a bad impact on immune system. Milk shakes which contain combination of lactogen and certain fruits such as bananas which may contain common allergen may aggravate an asthmatic attack. Milk with eggs, reheated cow's milk, consuming too much sugar along with saturated fats, can lead to number of immunological disorders^{xix}. It has been regularly observed in the clinics that rheumatoid arthritis patients who consume curds at night, sour food at night complain of more morning stiffness. This may be due to effect of *Kala viruddha* diet which would accelerate antigen and antibody reactions and exhibit an impact on WBCs.

Effect on Oxidative stress

Food incompatibilities lead to oxidative stress which results in dysregulation of various cellular processes through modulation of signalling molecules, production of antioxidant enzymes and non-enzymes, cell growth, and chronic inflammation, which play major roles in the incidence of chronic diseases such as cancer.

Discussion

Food incompatibilities prevailing in today's era can be better understood by the examples like taking food without hunger, consumption of food at night or after midnight, intake of food without digestion of previous meal, eating very fast/very slow. Fast food can be derived in context with *viruddhaahara* by the following correlation like heavy to digest- *Agni Viruddha*, fast food with cold drinks- *Samyoga Viruddha*, method of preparation (reheating/same oil for frying) - *Sanskara viruddha*, nutrition value less or zero - *Sampat Viruddha*. These food incompatibilities prevailing in today's era can be categorized in different types of *Viruddha Aahara* as follows:

According to Acharya Charaka

1. Desha Viruddha- The food items having similar properties to that of *Desha* is called as *Desha Viruddha*. It is stated that one should take food having properties opposite to corresponding *Desha*. Incompatibility of place occurs when rough and hot substances are used in *Jangala desha* (dry and arid region) people and unctuous and cold substances are used in *Anupa* (moist and marshy) *desha* people. *Charakacharya*

considered only *Bhumi Desha* as *Desha Viruddha* whereas *Gangadhara* has explained *Desha Viruddha* as *Bhumi Desha* as well as *Sharira Desha Viruddha*.

Examples:

Ruksha, Tikshna ahara in *Maru bhumi* - consumption of alcohol in desert land.

Snigdha, Sheeta ahara in *Anupa bhumi* - cool milkshakes and juices/Consumption of ice cream / cold drinks in hill station.

2. Kaal Viruddha- Consuming food items having similar properties to that of *Kaal* i.e. Season, Day-Night time.

Example:

Sheet ahara in *Hemant Ritu* - consumption of Ice-creams in winter.

Day Night- Consumption of curd at night.

Katu and *Ushna ahar* in *Grishma Ritu* –spicy *pav-bhaji* and *missal-pav* in summer.

3. Agni Viruddha- Food taken without knowledge of individual's *Agni* which may be either of 4 types *Samagni, Tikshnagni, Mandagni* and *Vishamagni*. Intake of heavy food in *mandagni* person or intake of light food in less quantity in *tikshnagni* person can be incompatible.

Example:

Laghu and *Alpa Matra Aahara* for *Tikshna Agni* - consuming *Churmura* (popcorn etc.) in excessive hungry condition.

Guru and *Adhika Matra Aahara* in *Manda Agni*.

4. Matra Viruddha- There are some food items which act as *Viruddha Aahara* when mixed in equal or unequal quantity or when food is consumed more or less in quantity.

Example:

Honey and *Ghee* in equal quantity.

Consumption of food in excess (if we like the taste).

Consumption of food in less amount than normal (if we dislike the taste).

5. Saatmya Viruddha- *Satmya* is adaptability or habit or suitability of a person consuming such food items for which that individual is not used to. *Satmya Viruddha* occurs when sweet and cold substances are consumed by persons who are accustomed to pungent and hot substances.

Example:

Consumption of Chinese food by Indians.

Consumption of Egg by a pure vegetarian person.

Consumption of *roti – sabji* by South Indian people.

6. Dosha Viruddha- Food items having similar properties to that of *Doshas*, which causes *Dosha dushti* are called as *Dosha Viruddha* or Utilization of diet having qualities similar to aggravated *Dosha*.

Gangadhara has elaborated this term in 3 types

●*Dosha Viruddha* according to *Rasa - Kashaya Rasa* for *Vata*.

●*Vyadhi Viruddha* - Curd mixed with rice for *Kushtha*.

●*Dravya Swabhava* - Poison (*Dhatu pradushana dravya*).

Example:

Consumption of dry things as *matar, chole* etc. by *vata* aggravated person.

Consumption of *dadhi* and rice by *kapha* aggravated person.

Intake of *ruksha, laghu* diet in *vata* aggravated person.

7. Sanskara Viruddha- Food prepared by wrong method is *Sanskara Viruddha*. *Sanskara* means method of processing. Process of cooking can change the quality of food and when food is prepared in a particular way it produces the harmful effects

Example:

Boiling of butter milk or curd.

Reheating of Food items - French Fries.

Food prepared in Microwave in other than microwave friendly utensils.

Heated Honey (mixing with hot water, cooking biscuits).

8. Veerya Viruddha- Consuming food items having opposite *Veerya* at the same time termed as *Veerya Viruddha* i.e the *dravyas* having opposite potency are taken together is *Virya Viruddha*.

Example:

Fish of *Ushna Veerya* consumed with *Sheeta Veerya* Milk.

Brownie in which ice-cream is mixed with hot chocolate cream and then consumed.

9. *Krama Viruddha*- Food Consumed by wrong sequence is considered as *Krama Viruddha*.

Example:

Intake of food (Breakfast/Lunch) before evacuation of bowel and bladder or without appetite.

Not consuming food when hungry.

Sweet Dishes after meal.

Intake of food just after over exertion.

10. *Koshtha Viruddha*- Here Chakrapani and Gangadhara said that any drug or food item taken without proper knowledge of individuals *Koshtha* termed as *Koshtha Viruddha*. *Mrudu* (mild), *Krura* (hard) and *Madhyam* (medium) are three types of *koshthas*

Example:

Strong Laxatives by *Mrudu Koshtha* person

Barbeque food and baked food consumed by person who is habitual to Constipation i.e. *Krura Koshtha* person.

11. *Awastha Viruddha*- Consuming food without exact knowledge of own health and bodily conditions i.e. *Vata prakopaka aahar* by persons who are doing laborious work daily and consumption of *kapha prakopaka aahar* by persons who feel sleepy and don't do physical work.

Example:

Intake of Vata aggravating diet like *poha*, *murumura*, beans by a person whose *Vata* is aggravated due to excessive exhaustion and sexual act.

Intake of *sleshmala* diet like Curd, by a person whose *sleshma* aggravated due to excess of sleep and laziness.

Alcohol consumption by labourers.

Consumption of heavy food like *Puri/ Paratha/Sweets* in *Amaja Jwara*.

Consumption of sprouted pulses (except moong) by porters, hawkers, servants, construction site workers, sweepers etc.

12. *Parihara Viruddha*- *Parihara* means things to be avoided i.e Consuming cold food items after hot and spicy food.

Example:

Cold drinks after Samosa

Consumption of *ushna dravya* after consuming of meat of pig.

13. *Paaka Viruddha*- Food which is not properly cooked i.e. uncooked, partly cooked , partly burned, half-baked food is *Paaka Viruddha*.

Example:

Half fried egg.

Roasted chicken.

14. *Upachaara Viruddha*- *Upachara* means to be observed i.e. Consuming food items which are not supposed to consume after specific treatment or act is *Upachaara Viruddha*.

Example:

Drinking cold water after *snehapana*, after steam bath.

Intake of hot water after taking honey.

15. *Samyoga Viruddha*- Consuming food items which are not supposed to combine with each other is *Samyoga Viruddha* i.e. the combination of two or more items which results in manifestation of new properties having bad effect.

Example:

Amla Rasa with *Madhura Rasa* - Strawberry milkshake, Banana milkshake.

16. *Hrut Viruddha*- Consuming food items which are not pleasant in taste or according to liking is *Hrut Viruddha*.

Example:

Non-veg for vegetarian people.

Decoctions for Children.

17. *Sampat Viruddha*- Food items prepared by using unhealthy ingredients or Consumption of those substances which are not having their proper qualities.

Example:

Intake of substance that are not matured, over matured or putrefied.

Im-mature curd.

Over matured banana.

Staled food.

Meat of diseased animal.

Packed food.

18. *Vidhi Viruddha*- In Ayurveda there is detailed explanation of rules for food consumption under Aahara Vidhi vidhana concept. Consuming food without considering those rules is *Vidhi Viruddha*.

Example:

Not consuming food which is hot and fresh - food from Lunch box.

Talking with others.

Watching T.V while consuming meal.

According to Acharya Sushruta: Acharya Sushruta has explained various types of *Viruddhahara*, in *Sutrasthana* 20th chapter *Hitahitiyam Adhaya* as

● ***Samyoga Viruddha***: Combination of substances with other act as *Visha* like *Amla Phala, Lavana, Kulatha, Pinyaka, Dadhi, Taila, Matsya* with *milk* act as *Viruddha*

● ***Karma Viruddh***: *Viruddha* by processing like: *Ghee* kept in bronze vessel for more than ten days, Honey in *Ushna Kala* and with *Ushna Dravyas*.

● ***Rasa Viruddha***: *Madhura+ Amla/ Lavana Rasa, Veerya Viruddha*

Madhura +Katu-Rasa, Veerya, Vipaka Viruddha

Madhura+Tikta/Kashaya-Vipaka Viruddha

Amla +Lavana-Rasa Viruddha

Amla+Katu-Vipaka Viruddha

Amla +Tikta/Kashaya- Viruddha in all aspect

● ***Maana Viruddha***: *Madhu* and *Gruta* in equal quantity act as *Viruddha*.

Conclusion

Food-food interaction along with food drug interaction is an important factor which changes the properties of food articles as well as action of drugs which is used in various ailments. So, these factors may also be taken into account before taking any food articles especially incompatible diet as described in Ayurveda. Along with interaction of foods and drugs, factors like Agonist and Antagonist, Free radical formation, Food Allergies, Food Poisoning should also be considered for healthy and appropriate consumption of diet.

Regular and inappropriate intake of the incompatible food article may lead to inflammation at a molecular level. These incompatible food combinations may be deleterious to health, which may affect adversely on the immune system, cellular metabolism, hormonal system as well as our psychological health.

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