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VIRUDDHA AHARA: A CRITICAL VIEW

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INTRODUCTION

Food incompatibilities in today's perspective Viruddha Ahara can lead to inflammation at a molecular level. Number of food incompatibilities are mentioned in old Ayurved literature, such as Charaka and Sushruta Samhitas. These type of food combinations are not in use in today's era. We have to identify new food incompatibilities, which are used today in day-to-day life as per Ayurvedic perspective. These food incompatibilities can also be categorized into Karma Viruddha, Krama Viruddha, Veerya Viruddha, and so on. Such food combinations can prove harmful, which may be imparting its untoward effects on immune system, cellular metabolism, growth hormone, and Dehydroepiandrosterone sulfate (DHEAS). A new branch called topography (a science related to combination of food) is emerging, which tells about the combination of basic categories of the food.[4] As per this science proteins must not get combined with starch and carbohydrates and may be consumed differently. This is because starches require an alkali medium and the amylase in saliva contains ptyalin, an enzyme that breaks down starch into maltose. Those 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 to whatever cells in the body need it. If there is no immediate requirement, glucose will be converted to glycogen and stored in the liver, or into fat to be stored in adipose tissueConsuming proteins and starches together will result in absorption of one being delayed by the other.[4] 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. 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. 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.

The unwanted side effects can emerge inside the body when two or more types of foods are consumed together. Such reactions can be less important but on long term, it can be fatal upon precipitating serious side effects.

Green tea or black tea and milk Tea contains flavonoids called catechins, which have many beneficial effects on the heart. When milk is added to tea, then a group of proteins in milk, called caseins, interact with the tea to reduce the concentration of catechins. So avoid tea and milk together.[5] Milk and yoghurt interaction As you know consuming both together can precipitate milk inside the stomach that may irritate and induce vomiting. So avoid milk and yoghurt together.

Tea and garlic

Tea contains anticoagulant compounds called coumarins. When combined with garlic (that also has anticlotting properties), they may increase the risk of bleeding. So, better to avoid tea and garlic together.[6]

Pomegranate juice and grapefruit juice

Pomegranate juice and grapefruit juice, are both known to block the cytochrome P450 3A4 enzyme systems in the intestines and increase blood levels of many medications you are taking. Taking these two juices together may synergize the above action.[7]

Unripe (green) tomatoes or potatoes and alcohol The unripe green tomatoes contain huge amount of solanine,

which may interact with alcohol. You may feel more sedation if the intake is more.[8]

Sanskara Viruddha

Deep frying of potatoes can develop toxic substances, such as acrylamide, which can prove to be carcinogenic.[9]

Eating potato chips regularly is Sanskara viruddha

It is also mentioned in Ayurved text that heating honey is Sanskar Viruddha. Honey that is available in the market is Agmark honey and this honey is strongly heated before packaging. It is very important to find the relevance about why we must not
heat honey.

Mode of action of Viruddha Ahara

Viruddha Ahara taken regularly could induce inflammation at a molecular level, disturbing the eicosanoid pathway creating more arachidonic acid leading to increased prostaglandin-2 and thromboxane. This inflammatory effect is an important effect as these are all the basic pathologies that create Agni Mandya, Ama, and a number of metabolic disorders. It has been clearly mentioned in Ayurveda text that oil and food must not be reheated. Reheating of oil creates more oxidation and if consumed may create more oxidative stress creating more free radicals. Oxidative rancidity occurs when fatty acids are exposed to oxygen in the presence of heat or light, resulting in the formation of hydroperoxide compounds. These hydroperoxides in turn form aldehyde molecules. Oxygenated aldehydes are toxic compounds that cause oxidative stress in the cells of body and may increase the risk of degenerative illness and artherosclerotic disease. Hydroperoxide fatty acids may also have a detrimental effect on the fat-soluble vitamins A and E. Thermally oxidized fat generates toxic lipid peroxidation products that would induce oxidative stress in animals.[10] Degree of saturation of oil is an important factor determining the quality of cooking oils. Unsaturated fatty acids are more susceptible to lipid oxidation than saturated fatty acids and for this reason they are good source of free radicals.[11] A recent study found that a toxin called 4-hydroxy-trans-2- nonenal (HNE) forms when such oils as corn, soyabean, and sunflower oils are reheated. Consumption of foods containing HNE from cooking oils has been associated with increased risks of cardiovascular disease, stroke, Parkinson's disease, Alzheimer's disease, Huntington's disease, various liver disorders, and cancer.[12] Certain researches pointed out that the quantity of HNE is higher in deep fried foods, such as snacks that fried in cooking oils such as corn, soya bean, and sunflower oils. Scientific explanation about the formation of HNE is when fruits or vegetable pieces are boiled inside oil to get fried, then oil molecules that penetrated into the fried food gets converted into similar molecules like that of HNE. While getting cooled to room temperature, this molecule will convert into toxin HNE, which will ultimately lead to risks of cardiovascular disease, stroke, Parkinson's disease, Alzheimer's disease, Huntington's disease, various liver disorders, and cancer. Since it is a potent electrophile, HNE is one of the most toxic aldehydes generated during lipid peroxidation. It combines spontaneously with glutathione, and with cysteine, histidine, and lysine residues of proteins, and displays a variety of cytotoxic and genotoxic effects.[13] In cardiac myocytes, HNE causes metabolic inhibition, thiol oxidation, and generates pro-arrhythmic changes in cellular excitability.[14] HNE-modified proteins have been detected in atherosclerotic plaques, and high concentrations of HNE have been measured in reperfused or Adriamycin-treate] hearts. Majority of the disease has an inflammatory pathology. Even if drug therapy successfully blocks the COX and LOX enzyme systems, arachidonic acid can still be converted into other damaging molecules, such as epoxy derivatives. So, another approach to treating the diseases involving eicosanoids seems desirable: to try to prevent eicosanoid production by dietary modifications. In addition, consuming omega-6-rich oil and that too rancid by reheating aggravates the inflammatory pathology. High-temperature cooking must also be called as Sanskara iruddha. Foods typically cooked at high temperatures, like meats, may contribute to the risk and exacerbation of chronic diseases linked with inflammation. When proteins are cooked with sugars in the absence of water, AGEs are formed. Water, however, prevents these sugars from binding to the protein molecules. Thus, combination of proteins with sugar and cooking it in absence of water is Viruddha. Grains, vegetables, fruits, and all such have protein in them as well, with browning being an indication of AGEs. AGEs are the end products of glycation reactions, in which a sugar molecule bonds to either a protein or lipid molecule without an enzyme to control the reaction. A similar reaction, known as glycosylation, uses an enzyme to control the reaction, targeting specific receptor sites on cells. Glycation, on the other hand, "Advanced Glycation endproduct is a random process that damages the functioning of biomolecules." Certain processing incompatibilities are observed, which leads the food to develop certain toxic chemicals or unwanted chemicals. Certain processing deteriorate the nutrients' value of the food or convert into RAGE that is receptor for advanced glycosylated endproducts. It is now well established that formation and accumulation of AGEs progress during normal aging, and at an extremely accelerated rate under diabetes, thus being implicated in various types of age related disorders, such as diabetic vascular complications, neurodegenerative diseases, and cancers. Furthermore, there is accumulating evidence that AGEs and their receptor RAGE interaction elicits oxidative stress generation and subsequently alters gene expression in various types of cells. In addition, digested food-derived AGEs are found to play an important role in the pathogenesis of the age related disorders as well. Indeed, restriction of diet-derived AGEs not only blocks the progression of atherosclerosis and renal injury, but also improves insulin resistance in animal models.

AGE-poor diets reduce serum levels of inflammatory biomarkers in patients with diabetes or chronic renal failure.

These observations suggest that the restriction of food-derived AGEs or the inhibition of absorption of dietary AGEs may be a novel target for therapeutic intervention in the age related disorders. Certain type of food combinations and the unwanted substance released by certain incompatible food in vivo may have a bad impact on immune system. Milk which contains lactogen and certain fruits, such as bananas, which also 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 immunologic disorders. 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. It must be studied that weather such type of Kala Viruddha diet would accelerate antigen and antibody reactions and exhibit an impact on WBCs. These types of studies would also suggest that regular consumption of Viruddha Ahara would also lead to immune senescence.

As per the definition explained by Charaka Samhita those food substances and combinations, which induce deteriorating action on the body tissues, that is, Dhatus can be called as Viruddha Ahara. Fast food is high in energy density and low Sabnis. A critical view in essential micronutrient density, especially zinc (Zn), of which antioxidant processes are dependent. It has been tested that frequent fast food consumption could induce oxidative damage associated with inflammation in weanling male rats in relevance to Zn deprivation, which could adversely affect testis function. Zn and iron (in plasma and testicular tissue), plasma antioxidant vitamins (A, E, and C), as well as testicular Super-Oxide Dismutase (SOD) and reduced Glutathione (GSH), lipid peroxidation indexes [Thio-Barbituric Acid Reactive Substances (TBARS) and Lipoprotein Oxidation Susceptibility (LOS)], inflammatory markers (plasma C-Reactive Protein (CRP), and testicular Tumor Necrosis Factor - Alpha (TNF-a)) were determined in one of the studies. Serum testosterone and histological examination of the testis were performed also. A severe decrease in antioxidant vitamins and Zn, with concomitant iron accumulation was found. Zinc deficiency correlated positively with SOD, GSH, antioxidant vitamins, and testosterone, and negatively with TBARS, LOS, CRP, and TNF-a, demonstrating a state of oxidative stress and inflammation. It was concluded that micronutrient deficiency, especially Zn, enhanced oxidative stress and inflammation in testicular tissue leading to underdevelopment of testis and decreased testosterone levels. This could be another reason that Charaka has mentioned the diseases, such as Shandhatva and Santandosha, caused due to excess consumption of Viruddha Anna. Certain food combinations are capable of switching on or off little epigenetic tags on genes that tell other genes what to do to be healthy, repair, reproduce, and fix anything that goes wrong with the gene's ability to do the healthy thing to make sure the person is healthy, doesn't age too rapidly, and stays energetic. The process of creating a new protein in cells is referred to as gene expression. Gene expression is highly regulated by the body to ensure that the correct protein is produced in the correct amount, and at the appropriate time. Errors in gene expression have the potential to lead to illnesses. Epigenetic modifications are changes made to the genome without changing the nucleotide sequence. A common type of epigenetic modification is the addition of methyl groups to DNA. A methyl group is simply a carbon with three hydrogen atoms attached to it. The epigenetic addition or removal of methyl groups to DNA physically alters the structure of the DNA.[19] Experts in nutrition believe that these epigenetic changes can affect the expression of certain genes. This could have implications for fetal development, cancer, aging, and other biological processes.

The research in this field is in the early stages and much is still unknown about this area of nutrition. However, as researchers learn more, they will have a better understanding of the best dietary recommendations to reduce the risk of disease and improve health. In the quotation of Charaka about the effects of Viruddha Ahara he has mentioned Shandhatva. Shandhatva can be congenital, which can be due to certain genetic expressions in fetus if the parents have consumed regular Viruddha Ahara. A number of dietary components exert their beneficial effects on human health by modulating the expression of genes involved in the pathogenesis and/or in the protective mechanisms elative to epidemiologically relevant diseases (e.g., cancer, cardiovascular diseases). In this respect, the downstream effects of posttranslational modifications of histone proteins and other DNA-interacting proteins are emerging as crucial aspects contributing to the phenotypic response to food intake and to individual nutrients. A large number of studies have clearly demonstrated that some dietary components affect gene transcription, through multiple mechanisms. To mention few examples, fatty acids can act as ligands of membrane and nuclear receptors, thus regulating intracellular signaling and gene expression while polyphenols, present in a large number of food sources, exhibit anti-inflammatory activities by interfering at multiple levels with the activation cascade of nuclear factor-κB, a key regulator of the inflammatory response. Apart from all biochemical effect of Viruddha Ahara, food substance which is not liked by the person leads to Viruddha Ahara. This may lead to continual maldigestion too. Charaka has also mentioned that those people who are able to digest Viruddha Ahara properly, who exercise very regularly, who are young and have a very good status of Agni can consume Viruddha Ahara.

CONCLUSION

From the above matter, it is clear that Viruddha Ahara is an important aspect of today's improper dietary habits. This can lead to several hazardous diseases unknowingly to the patients. Therefore, it is important to enlist the causative incompatible dietary factors and train the patients to avoid such etiologic factors. The article also opens a new research window in the field of Ayurvedic dietetics to research upon a variety of incompatible factors to observe the effect.

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