

A CRITICAL REVIEW OF ASSOCIATION BETWEEN INCOMPATIBLE DIET AND INFERTILITY WITH SPECIAL REFERENCE TO JUNK FOOD

Vd.Kalpna Denge¹, Vd.Rupali Gatifane²

^{1,2}Associate Professor

Dept. of Agadtantra, D.Y.Patil School of Ayurveda, Nerul, Navi Mumbai

ABSTRACT

For a healthy life, everyone needs a healthy and balanced diet. Nowadays food habits & lifestyle have been modified according to the profession of individual. Everyone is frequently consuming incompatible food or junk food. As per Ayurved incompatible diet i.e. *Viruddha Aahar* is one of the root causes of various health problems. Infertility is one of them. Modern science also accepts the association of food customs with reproductive health of human being.

In present era, fertility rate is going down day by day. Majority of population is suffering from infertility which is a rising issue. Present article deals with the study of association between incompatible diet and infertility with special reference to junk food. So with the help of this study we tried to enlist the food to be avoided to prevent infertility. Thus first goal of Ayurveda i.e. Prevention can be achieved.

Keywords: incompatible diet, *Viruddha Aahar*, junk food, infertility.

INTRODUCTION

Incompatible diet i.e. *Viruddha Aahar* is a unique concept of Ayurveda. *Viruddha Aahar* means the food which exerts opposite or undesirable effects on the body. According to Ayurveda, such type of diet is one of the root causes of various health problems. Infertility is one of them^[1] Infertility is a rising problem of this era. It has been accepted that food customs are closely associated with quality of life in both men and women's reproductive life. Nowadays food habits & lifestyle have been modified according to the profession of individual. Everyone prefers incompatible food or junk food over balanced diet as it tastes good, easy to make and quick to consume.

So the aim of this paper is to review the association between incompatible diet or junk food and infertility and to develop awareness regarding junk food to prevent infertility.

Materials & Methods

Literature has been reviewed from both Ayurveda & Contemporary sciences.

Also various related websites have been searched.

Literature review:

Viruddha Aahar is defined by Charaka. The literal meaning of word *Viruddha* is opposite. The diet which vitiates *doshas* from their places but does not eliminate it out of the body and becomes harmful is said

to be *Viruddha* or incompatible. The food which is wrong in combination, wrong in processing, consumed in incorrect dose, in-
There are 18 food incompatibilities^[3]

correct time of the day and in wrong season can lead to *Viruddha Aahar*^[2]

1	Desha Viruddha (Place incompatibility)
2	<i>Kala Viruddha</i> (Time incompatibility)
3	<i>Agni Viruddha</i> (Gastric fire incompatibility)
4	<i>Matra Viruddha</i> (Quantity incompatibility)
5	<i>Satmya Viruddha</i> (Homologation incompatibility)
6	<i>Dosha Viruddha</i> (Body humors incompatibility)
7	<i>Samskar Viruddha</i> (Processing incompatibility)
8	<i>Veerya Viruddha</i> (Potency incompatibility)
9	<i>Koshtha Viruddha</i> (Bowel tendency incompatibility)
10	<i>Avastha Viruddha</i> (State of health incompatibility)
11	<i>Kram Viruddha</i> (Sequence incompatibility)
12	<i>Parihar Viruddha</i> (Contraindication incompatibility)
13	<i>Upachar Viruddha</i> (Treatment incompatibility)
14	<i>Paak Viruddha</i> (Cooking incompatibility)
15	<i>Samyoga Viruddha</i> (Combination incompatibility)
16	<i>Hriday Viruddha</i> (Palatability incompatibility)
17	<i>Sampad Viruddha</i> (Richness of quality incompatibility)
18	<i>Vidhi Viruddha</i> (Rules for eating incompatibility)

From the above it can be considered that today's mostly loved junk food is one of the type of *Viruddha Aahar*

What are Junk foods and Fast foods?

In this era, junk food has been taking the world by storm. Junk food is favored by everyone due to their attractive colors, tempting taste and their wonderful array of varieties and flavor. Junk food implies that food which has little nutritional value and contains excessive fat, sugar, salt, and calories with little fibers, protein, vitamins or minerals^{[4][5]} Junk food includes salted snack foods, sweet desserts, fried fast food^[6] Snacks such as ice cream, milk shakes, soda, fizzy carbonated beverages, breakfast

cereals, cookies, candies, chips, pizza, burgers, instant noodles etc are all junk foods^[7]

Here is some of junk food:^[8]

Pizza The pizza is heavily laden with sodium and carbohydrates, flour and cheese. They contain high calorie counts a harbinger of cardiovascular diseases.

Burgers With its deadly combination of mayonnaise, cheese, high levels of dairy fat, deep fried patties, topped with unhealthy sauces filled with sugar and sodium, they tend to increase cholesterol levels owing to saturated fats. Hence, Burgers occupy a primary position as being one of the worst junk foods, offering 1360 calories per serving.

Deep Fried stuff such as French fries, potato chips, fried chicken, kebabs and the most

popular Indian samosas are the ultimate sources of trans fat, elevating cholesterol levels, leading to clogging of arteries on the arterial walls of the heart. They are overloaded with sodium that increases the risk of obesity, hypertension and heart diseases.

Breakfast cereals A healthy breakfast is essential to kick-start the day full of vigor and vitality. However, most people prefer breakfast cereals that claim to be extremely healthy. The fact remains that cereals, like porridge, oats and cornflakes, covered with unhealthy sugars are nonetheless unhealthy.

Candies The easily available vibrant colorful array of desired candies, toffees, jellies and candy buttons packed with high doses of fructose and sucrose create an instant feel good factor increasing blood sugar levels.

Donuts The epitome of junk food and a universal favorite, Donuts drizzled with sinful mouth-watering chocolate, jam and tempting sugar toppings, increase the risk of developing cancer. They jeopardize health due to the blending of these ingredients along with hydrogenated oils, refined sugar and white flour deep-fried in extreme heat. When fried they release harmful cancer causing carcinogens properties causing harmful effects on the body.

Pastries and cakes Rich creamy delicious wonders, cake happen to be one of the best options for desserts. However, a tempting wedge contains sugar in high magnitude combined with a highly raw processed variety of carbohydrates that contain high glycaemic index thereby increasing the blood glucose levels in the body. Besides the cream prepared with rich sinful chocolate and eggs, dense with trans-fat, is detrimental for health.

Ice Cream Rich in sugar and fat, the enticing ice creams, generally cause an expanding waistline, due to metabolic imbalances caused by the elevated levels of fat in the dessert. Therefore, this sinful concoction leads to obesity and decreased appetite resulting in an unhealthy digestive tract.

Carbonated Beverages With high quantities of sugar, insignificant amounts of minerals and harmful chemicals, fizzy carbonated drinks, popularly known as soft drinks, are sweetened colas available in the market. Apart from this, they contain high levels of caffeine that are harmful for health. These cause acidity caused by the carbon dioxide released in the body. They affect development of bones due to the elimination of calcium that help counteract the balance of acid in the body. Other drinks available with a sugar free tag contain Aspartame, an artificial sweetener, which when taken for long periods cause dangerous health consequences.

Instant noodles Due to the inclusion of certain sodium additives, instant noodles contain increased carbohydrates and sodium, lacking in essential proteins, vitamins, fiber and minerals. Another aspect is that the container of instant cup noodles discharges certain substances and chemicals akin to hormones, along with dioxin, a chemical, which saturate the noodles when hot water is added. Covered with wax, substances like Propylene glycol and MSG (monosodium glutamate) they have negative effects on health often resulting in hypertension, stroke, organ damage, cancer and a weakened immune system.

The more highly processed items usually fall under the junk food category^[9]

Processed Food - It applies to any food that has been altered from its natural state in some way. Anything that's been processed may contain added salt, sugar and fat. Examples of common processed foods include: breakfast cereals, cheese, tinned vegetables, bread, microwave meals or ready meals, soft drinks. These foods can also be higher in calories due to the high amounts of added sugar, salt or fat in them.^[10] Processed foods are bad for health. They are hyper rewarding and lead to overconsumption. They are often high in refined carbohydrates, low in nutrients and low in fibers^[11] This category of foods include a lot of harmful substances like MSG, Trans Fats, high fructose corn syrup, and soda^[12] When junk food is consumed very often, the excess fat, carbohydrates, and processed sugar found in junk food contributes to an increased risk of cardiovascular disease, diabetes, weight gain, and many other chronic health conditions.^[13]

Junk Food can also cause infertility^[14]. As per Ayurveda junk food can be considered as *Viruddha Aahar* or incompatible diet which is said to be the cause of many systemic disorders. It can be observed from the literature that *Viruddha Aahar* can lead to *Shandhya* i.e. infertility^[15]

What is Infertility?

Infertility is defined as the inability to conceive. Not being able to have children is often a source of great emotional turmoil.

The World Health Organization defines infertility as follows:^[16]

Infertility is a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.

Primary infertility is infertility in a couple who have never had a child. Secondary infertility is failure to conceive following a previous pregnancy. Infertility may be caused by infection in the man or woman, but often there is no obvious underlying cause.

Infertility is a worldwide problem challenge. It affects 13% to 15% of couples worldwide. Infertility by itself does not threaten the life, but it has devastating psycho-social consequences on infertile couples. The feelings experienced by the infertile couples include depression, grief, guilt, shame, and inadequacy with social isolation.

Causes of infertility^[17]

Causes of male infertility: Abnormal sperm production or function, Problems with the delivery of sperm, Overexposure to certain chemicals and toxins, Damage related to cancer and its treatment.

Causes of female infertility: Ovulation disorders, Uterine or cervical abnormalities, Fallopian tube damage or blockage, Endometriosis, Primary ovarian insufficiency, Pelvic adhesions, Thyroid problems, Cancer and its treatment. Medical conditions such as celiac disease, Cushing's disease, sickle cell disease, kidney disease or diabetes, can affect a woman's fertility. Also genetic abnormalities can make conception and pregnancy less likely. Temporary infertility may occur with the use of certain medications.

Apart from these causes there is growing evidence that nutritional habits may have a significant effect on both male and female fertility^[18]

Food is meant to nourish the body and optimize health, which in turn has a positive impact on fertility. Frequent consumption of

junk food is contributing in growing infertility rates.

Fertility disorders and the resulting inability to reproduce constitute an increasingly common public health problem in contemporary society.

DISCUSSION:

Fertility is multi-factorial, meaning that there are many, many elements that can be at the root of fertility problems.

Junk food refers to foods which are easy to make and quick to consume. According to Ayurveda it is a *Viruddha Aahar*. It is *Samskar Viruddha* incompatibility and causes infertility if consumed regularly.

Regular consumption of such *Samskar Viruddha Aahar* i.e. junk food may cause aggravation of *doshas* which get accumulated over there and causes obstruction i.e. *strotovarodh*. Due to *strotovarodh* process of nourishment of further *dhatu* i.e. *uttarottar dhatuposhan prakriya* stops which causes *shukrakshay* (Deficiency of sperm and ovum) which lead to infertility. This is pathophysiology i.e. *samprapti* of infertility according to Ayurveda.

Modern science also accepts that many junk foods have Trans fats which behave like saturated fats when they get in the body. They clog up the human arteries and cause plaque to build up contributing to heart disease and stroke symptoms.^[19]

Junk foods with high levels of calories from salt, sugar and saturated fats, contain insufficient vitamins, minerals, proteins and amino acids. Food, which acts as a basic element for good health, plays a vital role for sustenance and overall well-being. However, lack of nutrition, affects the smooth functioning of the body that is forced to create its own enzymes, in order to convert food into

energy. The enzymes that are utilized are otherwise reserved for the metabolic functioning.^[20]

All of the B vitamins, Zinc, Vitamin E, C, Beta carotene, Omega 3 fatty acids, Selenium are necessary for fertility. As junk food has no nutritive value lack of these may cause infertility.

It includes a lot of harmful substances like MSG and Trans Fat. MSG (monosodium glutamate) is a flavor enhancer commonly added to Chinese or Mexican foods. It has been shown to cause infertility in animals. It is also in chips, processed meat, and soups.^[21] Monosodium glutamate is the sodium salt of glutamic acid. As per Ayurveda it can be considered under *kshar*. In Ayurved it is mentioned that *kshar* causes *shukravahi strotodushti* i.e. vitiation of channels conveying *shukra* i.e. sperm or ovum which leads to infertility.^[22]

Baking soda which is used in preparation of many junk foods, Soft drink contain soda-bicarbonate which can be also considered as *kshar* and thus can be the of cause infertility Trans Fats are linked to infertility^[23] Consumption of more of trans fat increases trans fats, increase levels of bad cholesterol (LDL) and decrease relative levels of good cholesterol (HDL). A diet high in trans fats is likely to lead to obesity and being significantly overweight is not good for regular ovulation. The inflammatory effect of trans fats can interfere with ovulation, conception, and even early embryo development. Avoid anything with partially hydrogenated vegetable oil, which is the source of trans fats. Hydrogenated or partially hydrogenated oils are found in processed, fried and fast foods.

Many junk foods like soft drinks, chocolates contain Caffeine which causes problems with sperm: sperm count, motility and abnormalities, increases the risk of a miscarriage and thus decreases fertility [24]

Junk food contains high level of sugar and salt.

Excess sugar causes insulin levels to rise. Endocrine system is connected so when just one hormone cannot be regulated it can no longer perform and regulate the others including sex hormones (testosterone, estrogen, progesterone, etc.). Foods with high sugar level are thought to increase the risk of infertility. White rice, French fries, mashed potatoes, doughnuts, pumpkin, and cornflakes are some foods that cause infertility in women. [25]

Also high-salt diet can delay puberty and even impact reproductive health. [26] In Ayurveda also it is mentioned that excess sugar and salt can cause infertility. Too much sugar intake cause obesity [27][28] which leads to infertility [29]. Excess salt intake can also cause infertility [30][31].

Some of the junk foods are cheese based. Cheese is not made with pasteurized milk and can cause infertility in women. Bacteria listeria in cheese and milk that is not pasteurized has the ability to cross the placenta and affect the uterus. [32]

Recent studies have shown that lifestyle and especially diet can influence reproductive health and proper nutrition and nutritional status can decrease the risk of fertility disorders [33] [34] [35]

Complementing fertility therapy with modifying the diet and planning proper nutrition may result in increasing the effectiveness of the treatment. In today's perspective it's really difficult to stay away from junk food.

So regular exercise can minimize bad effects of junk food. In Ayurveda, Charaka has also mentioned that those people who are able to digest *Viruddha Aahar* properly, who exercise very regularly, who are young and have a very good status of *Agni* can consume *Viruddha Aahar* [36]

CONCLUSION:

From the above discussion, it is clear that *Viruddha Ahara* i.e. incompatible diet or junk food is an important aspect of today's improper dietary habits which leads to infertility.

While one may never have a perfect diet, but can make a conscious effort to cut down consumption of junk foods so that healthy diet should be consume for nourishment.

Parents should be cautious against feeding children with junk foods because it could lead to infertility.

Follow a healthy, fertile diet and exercise regularly to prevent infertility.

Prevention is always better than cure. So following guidelines may be helpful to cope up with infertility.

1. Eat healthy fats. Using more vegetable (unsaturated) oils is good for fertility.
2. Eat protein from vegetables, not meat. Proteins from peas, beans, and nuts improve fertility.
3. Eat healthy carbohydrates. Foods rich in fiber such as vegetables, whole grains, fruits and beans are rich in carbohydrates that are digested slowly, improving fertility, controlling blood glucose and insulin levels.
4. Avoid skim milk and prefer whole fat milk. Full-fat dairy products improve ovulation, and contain calcium which is an important nutrient for successful fertility

5. Iron-rich plants such as beans, spinach, tomatoes, pumpkin, beats and whole grains are all fertility boosters.

6. Stay away from sodas as they increase risk of ovulatory infertility.

7. Keep weight under control. Both overweight and underweight women are at higher risk of ovulatory infertility

8. Exercise regularly.

Limitations of study- This is a literature study only. Further observational or experimental study can be carried out in retrospective or prospective manner.

REFERENCES

1. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.102-103, page no.151, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.

2. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.85-87, page no.150, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.

3. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.84, page no.150, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.

4. www.merriam-webster.com/dictionary/junk. accessed on 11 March 2016.

5. www.macmillandictionary.com/dictionary/british/junk-food accessed on 11 March 2016

6. Larsen, Joanne; MS, RD, LD <http://www.dietitian.com/junkfood.html> accessed on 12 April 2016

7. <http://readanddigest.com/junk-food-facts-and-health-effects/> accessed on 10 May 2016

8. <http://readanddigest.com/junk-food-facts-and-health-effects/> accessed on 10 May 2016

9. "What Makes a Food Junk?". Huffington Post. 4 August 2010 accessed on 15 May 2016

10. <http://www.nhs.uk/Livewell/Goodfood/Pages/what-are-processed-foods.aspx> accessed on 17 May 2016

11. <https://authoritynutrition.com/9-ways-that-processed-foods-are-killing-people/> accessed on 21 March 2016

12. <http://naturalfertilityandwellness.com/fertility-diet-foods-to-avoid/> accessed on 21 March 2016

13. Roizman, Tracey. "Reasons Eating Junk Food Is Not Good". SFGate (Demand Media) accessed on 10 May 2016

14. <http://jonbarron.org/article/junk-food-may-impair-fertility#.Vr11fU9HsqE> accessed on 23 January 2016

15. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.102-103, page no.151, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.

16. www.who.int/reproductivehealth/topics/infertility/definitions/en/ accessed on 10 February 2016
17. <http://www.mayoclinic.org/diseases-conditions/infertility/basics/causes/con-20034770> accessed on 10 February 2016
18. <http://www.ncbi.nlm.nih.gov/pubmed/22516697> accessed on 22 March 2016
19. <http://www.realfoodindia.com/what-are-junk-foods-and-fast-foods/> accessed on 10 May 2016
20. <http://readanddigest.com/junk-food-facts-and-health-effects/> accessed on 10 May 2016
21. <http://infertility.health-info.org/fertility-diet-lifestyle/things-to-avoid.html> accessed on 22 March 2016
22. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Vimansthana chapter 5, verse no.19, page no.251, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.
23. <http://www.fertilityafter40.com/15-foods-to-avoid-when-trying-to-get-pregnant.html> accessed on 10 May 2016
24. <http://www.marilynglenville.com/womens-health-issues/fertility/> accessed on 12 May 2016
25. <http://health-blogtips.blogspot.in/2013/03/5-these-foods-cause-infertility.html> accessed on 17 May 2016
26. <https://www.yahoo.com/beauty/the-scary-impact-salt-may-have-on-your-119292815392.html> accessed on 11 May 2016.
27. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.42(1), page no.144, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.
28. Ashtanga Hridaya of Vagbhata with Sarvangasundara commentary by Arunadatta and Ayurvedarasayana commentary by Hemadri, edited by Pt. Hari Sadashiva Shastri Paradakara, Sutra sthana chapter 10, verse no.9, page no.175, Choukhambha Surbharati Prakashan Varanasi Reprinted 2005
29. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 21, verse no.4, page no.116, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.
30. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.42(3), page no.144, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.
31. Shruta Samhita of Sushruta with Nibandhasangraha Commentary of Shri Dalhanacharya & Nyayachandrika Panjika of Shri Gayadasacharya edited by Vaidya Jadavaji Trikamji Acharya & Narayana Ram Acharya, Sutra sthana chapter 42, verse no.9(3), page no.185, Choukhambha Krishnadas Academy Varanasi Reprinted 2010
32. <http://health-blogtips.blogspot.in/2013/03/5-these->

- foods-cause-infertility.html accessed on 17 May 2016
33. Susman, Ed. "Healthy Diet Boosts Semen Quality." 17 October 2011. Med Page Today. 20 October 2011. <http://www.medpagetoday.com/MeetingCoverage/ASRM/29088> accessed on 12 May 2016
34. <http://www.medicalnewstoday.com/articles/236272.php> accessed on 12 March 2016
35. <http://www.marilynglenville.com/womens-health-issues/fertility/> accessed on 12 May 2016
36. Charaka Samhita of Agnivesha elaborated by Charaka & Drudhabala with

Ayurveda Dipika Commentary by Chakrapanidatta, edited by Vaidya Jadavaji Trikamji Acharya, Sutrasthana chapter 26, verse no.105-106, page no.151, Choukhambha Surbharati Prakashan Varanasi, Fifth Edition 2001.

CORRESPONDING AUTHOR

Vd. Kalpana Denge

Associate Professor

Dept. of Agadtantra, D.Y.Patil School of Ayurveda, Nerul, Navi Mumbai

Email: kalpanadenge@gmail.com

Source of Support: Nil

Conflict of Interest: None Declared