

BHAJANA – EFFECT OF THE CONTAINER ON FOOD - A REVIEW

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ABSTRACT

Samskara is the Ayurvedic term for the processes done on the *Aharadravyas* to bring about change inequality. One among these *Samskaras* told in the classics is the use of different containers (*Bhajana*) to store, to serve and to eat in. In ancient days the utensils of many different materials were used like mud pots, wooden containers, iron, golden and silver vessels etc. Now a day, a wide variety of options are available as storage materials e.g plastic, glass, different metal alloys etc. Using such containers may either enhance or degrade the quality of the *Ahara*. Some of the quality enhancing effects of *Bhajanas* may be seen in the use of golden and silver utensils which gives germicidal property, or in the use of iron vessel in *Rasayanas* etc. Similarly there are also numerous references restricting the use of some specific materials for the storage of certain food items like copper vessel for curd, metal vessels for pickles etc. In the present era of globalization of food industry, the role of packed and canned food is on the rise. This has led to the increased importance of safe packaging and storing materials. The adulteration of food due to defective packaging materials has become a burning problem now-a-days. Knowing the positive and negative health effects of different *Bhajana* and applying it in day to day life is important. It is an effective way to prevent conditions as severe as heavy metal poisoning and cancer and also to enhance the nutritional value of the food.

Keywords: Adulteration, *Bhajana*, Heavy metal poisoning, *Samskara*.

INTRODUCTION

Food is the fuel for all living beings. The body is built, repaired and maintained with food. The proper quality of food decides whether these functions are done properly or not. Any

change in quality has an effect on health either positive or negative. The qualities of food depend upon their chemical constituents. There can be many things that affect or change the

chemical composition of a food like heat, combination, contact, time etc. In *Ayurveda* such factors which have an effect on the food we eat are explained under the *Ashta Ahara Vidhi visheshaayatana* (the eight factors that affects the quality of *Ahara*.) These eight factors are *Prakruti* (the nature of food), *Karana / Samskara* (any processes done on food), *Samyoga* (combination of different food), *Rasi* (quantity of food), *Desa* (the place of storage or of origin of food item), *Kala* (for how long or time of origin of food item), *Upayogasamstana* (rules of taking food) and *Upayokta* (the person consuming the food).¹ Among these *Karana* is also called as *Samskara* which are processes that transform the existing property of the food item². These processes include *Toya-Agni Sannikarsha* (contact with water and fire), *Soucha* (cleaning), *Manthana* (churning), *Desa* (specific place), *Kala* (time factor), *Vasana* (flavouring), *Bhavana* (trituration), *Kala Prakarsha* (passage of time) and *Bhajana* (container).³ Among these *Bhajana* is the factor that is constantly associated with all food articles at its different stages, viz. for cooking, for storing, for serving, for packing and even for covering the food items. These containers can alter the properties of the food by reacting with it. It can be either beneficial or harmful. The knowledge of these effects can be used to ma-

nipulate the properties of food either for addition of desired qualities by using a specific container or preventing the formation of undesirable qualities by not using some materials as containers for specific food items. Through centuries of observation our ancient classics have listed some dos and don'ts for the use of different materials for storing, cooking, serving etc. in different contexts. In this article the pros and cons of the materials used as containers both during the ancient and modern times are evaluated and suggestions are given for healthier food and thus healthier life.

Ancient containers

Containers to store, cook and serve food have been a necessity since the time men started to cook and eat food. Leaves were one among the first to be used. As time went by more and more materials were added to the list like, stone, wood, metals, mud, ceramics, glass and even precious stones. In the *Ayurveda* classical textbooks there are a few scattered references pertaining to the use of different containers for cooking, storing and serving food. As a general rule it has been told that only clean vessels are to be used and whenever it is not specified earthen vessels are to be used.⁴ Table 1 contains a list of food articles and the material in which they are to be kept⁵ along with the probable logic behind it.

Table 1:

Food Item	Container	Logic
Drinking water	<i>Tamrapatra</i> (Copper vessel)	Antimicrobial activity, Cu ions are immunity boosting , <i>Tridoshahara</i>
<i>Ghrita</i>	<i>Krushnalouhapatra</i> (black iron vessel)	The availability /absorption of iron ions increases if given with <i>Ghrita</i>
<i>Peyapadartha</i> (drinks)	<i>Rajatapatra</i> (silver vessel)	Purifies the liquid, prevents the putrefaction of the liquid so that it can be stored for long since silver is not so reactive.
<i>Phala & Bhakshya</i>	Leaves of banana etc	To keep it cool and prevent decay

(fruits & eatables)		
<i>Madya & Panaka</i> (alcoholic beverages)	<i>Mrittika Patra</i> (mud pots)	To reduce the <i>teekshnata</i> of those liquids by maintaining micro-aeration
<i>Ragashadava & Sattaka</i> (mostly sour preparations)	<i>Vaidurya Patra</i> (vessels made of precious stones)	These are non-reactive which will not corrode on contact with sour food

These vessels have been suggested specifically by the Acharyas after long years of observational study. On critical analysis it can be noticed that the porous nature of the mud vessels which were used commonly, facilitated the free movement of moisture which maintains the freshness of the food by keeping it cool. In addition air which is going in is also filtered by the vessels. The alkaline nature of the clay neutralises the acidic contents of the food making it more delicious and safe⁶. Metal vessels add to the quality of the drinks stored in them by adding beneficial mineral ions to them. Whereas the use of vessels made of precious stones were beneficial due to its inert quality.

Even with such health benefits the ancient storage materials had their own flaws. They were not easily portable owing to their heavy and fragile nature. They were not long lasting and some even decomposed fast like the leaves that were used to cover food. Those materials which were devoid of these demerits were unfortunately very costly for day to day use - like gold, silver, precious stones etc. Thus arouse the need for finding better and cheaper materials to make containers that paving way to the materials that we see today.

Bhajana in present era

The advance in science saw the discovery of many new materials for different purposes. Materials were needed not only for cooking and storing, but also for packing and covering

food items so that they can be stored for a longer period and transported to different distant places. Common materials used now-a-days in making cookware and utensils are aluminum, copper, tin, stainless steel, glass, iron, ceramics, Teflon (polytetrafluoroethylene), plastics etc. These new materials were developed to over-come the shortcomings of the materials of the olden days. They are portable, light weight, long lasting, mostly non-reactive, non-corroding, non-sticky and low in cost.

The outcome was that the monetary benefits of these overshadowed the health effects of their use. New materials posed newer threats to the health of both people and that of the environment. The metals used in canned foods for long durations lead to many health issues like heavy metal poisoning. The extensive use of the different types of plastics for its non-reactive, non-stick, light weight properties and cost effectiveness has led to high rates of land pollution, thanks to its non-biodegradable nature. Needless to say the use of any specific materials as containers for positive fortification of food was lost on the way.

DISCUSSION

The adverse health effects of modern containers and packaging materials when looked closely into are over whelming. Most people are unaware of these ominous effects and are left baffled as to what might have caused their rather serious health problems. Here are a few

examples of materials commonly in use now-a-days as storage containers, cooking vessels and packing materials for food items which pose the risk of different health hazards on their constant use.

Plastic

The substance most widely used and the most dangerous one for human and environment safety is plastic. They are non-biodegradable materials found in different compositions and qualities. Different forms of plastic produce different health hazards in the population. Low quality plastics and heating of plastic items are the greatest threat. The conditions that may result from the use of plastics may include cancer, birth defects, genetic changes, chronic bronchitis, ulcers, skin diseases, deafness, vision failure, indigestion, and liver dysfunction (polyvinylchloride - used in plumbing) etc. Plastic bottles are a greater menace due to their extensive use. They are made of polycarbonate plastic, a polymer made with the chemical bisphenol A (BPA). At present, BPA has been one of the first plastic materials to be recognized for its potential harm. BPA is a hormone-disrupting chemical that in animal studies has been associated with reproductive abnormalities such as lower sperm counts, hormonal changes like early onset of puberty, enlarged prostate glands, abnormalities in the number of chromosomes in eggs, and pre-cancerous changes in the breast and prostate. It also has (also) been associated with obesity and insulin resistance. A condition that commonly precedes the development of diabetes. Along with other hazards of plastic it has also been seen to hamper the functions of the immune system.⁷

Aluminium

Aluminium as a food packaging material has become increasingly popular due to its durability, low transportation cost and recyclability. It can be found as foils to wrap food items like sweets and as cans for different drinks. It has been proven that aluminium leaks out into food item if kept in it for a long time. Aluminium in the body prevents the uptake of other essential elements like Calcium, Zinc etc. and has also been linked with Alzheimer's disease. Aluminium cookware is especially dangerous when used to prepare acid foods such as tomatoes, which causes the metal to be leached out. Besides Alzheimer's, toxic levels of aluminium has also been associated with Parkinson's disease, various dementias and bone disease. Aluminium cans often contain an internal coating to protect the aluminium from beverage corrosion. These pose an entirely new health risk. Chemical compounds used in the internal coating of the can include types of epoxy resin. If traces of the epoxy resin leaks in to the digestive system, it will have deadly epoxy poisoning effect. This can cause extensive damage to the mouth, throat, eyes, lungs, oesophagus, nose and stomach. The ultimate outcome depends on the extent of this damage. It may extend to several weeks and the final outcome/ death may happen even after a month. Treatment may require the removal of a part of the oesophagus and stomach.⁸

Tin

Tin is a naturally occurring metal of a familiar silver colour. Tin is resistant to corrosion and often used as a coating for other metals such as steel. The most common example is the use of tin to line the inner walls of beverage cans and food containers. Even though the manu-

facturers provide a thin layer of coating to prevent leeching of tin into the food, this can be compromised by acidic food. The harmful health effects of tin intake may include liver damage, lung diseases, neurotoxic diseases, chromosomal damage, depression, degenerative changes of brain, hampered immunity⁹ etc.

Lead

Lead is a heavy metal that has hazardous effects on health. Although the major sources of lead poisoning are not food containers, use of some old ceramic vessels with glazing containing lead and cans with lead soldering can lead to lead being leached out into the food. Lead can also seep into the water from cordless kettles or if the vessel is painted with lead containing paint. Acidic foods are more prone to getting contaminated by lead than non-acidic ones.

Lead has the capacity to cross the placental barrier¹⁰ and affect the developing fetal brain causing learning difficulties, memory impairment, and behavioral problems. Babies who are drinking the milk of mother who is exposed to lead contaminated food also may have symptoms like developmental delay, learning difficulties, irritability, loss of appetite, weight loss, sluggishness, fatigue, abdominal pain, vomiting, constipation, seizures etc. Although children are primarily at risk, lead poisoning is also dangerous for adults. Signs and symptoms in adults might include high blood pressure, joint and muscle pain, difficulties with memory or concentration, headache, abdominal pain, mood disorders, reduced sperm count and abnormal sperm,

miscarriage, stillbirth or premature birth in pregnant women etc.

Heavy metals in general if taken in quantities higher than that is specified will have a deleterious effect on the health. It can cause irreversible brain damage, disrupt basic metabolic functions and are especially toxic to fetus, infants and young children.

Teflon

Teflon is the trade name of a polymer made with PTFE¹¹ (polytetrafluoroethylene) which is commonly used as a coating/surface protector for nonstick cookware. The nonstick pots and pans have become a household item but it should be used properly to prevent health hazards to both humans and pets. Overheating of the Teflon coated nonstick vessels produce toxic fumes which if inhaled by birds can kill them¹². In humans these fumes cause a condition known as the ‘polymer fume fever’¹³ or ‘Teflon flu’. The symptoms may include fever, chills, headache, tightness in chest and mild cough.

CONCLUSION

Bhajana is an important factor that affects the quality of food, for better or for worse.. The knowledge about the positive and negative effects of different materials on food can help in proper choice. Selection or avoidance of container based on “need and effect” can prevent various health hazards and also add value to food materials. The principles told in the *Ayurvedic* classical text though subtle can be very helpful in the proper selection and thus maintenance of health.

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