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Review Article

A CRITICAL REVIEW OF *SAMSKARA* ON DIET WITH SPECIAL REFERENCE TO MODERN PROCESSING TECHNIQUES

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ABSTRACT

Ayurveda has given prime importance to diet as it nourishes the body throughout life. Many key things like time to consume diet, quantity of diet, what should be taken along with diet, factors which affect the quality and effect of the diet are described in detail in ancient textbooks of *ayurveda*. *Samskara* or processing techniques are mentioned in detail in *ashtouvidhi vishayatanas*. At present many newer processing methods are in practice. These methods bring about chemical as well as physical changes in the composition of the food substance. They definitely improve the appearance, taste, flavour, shelf life, preservation of the food. At the same time they are changing the properties of the food constituents making them unsuitable for human consumption, causing many disorders. Present study is an effort to discuss the processing techniques described in *Ayurveda* and practiced in current scenario.

Keywords: *Ashtouaaharvidhi vishayatanani, samskaras*, processing techniques, methods of preparations, diet.

INTRODUCTION

Aahar is what we eat, it includes everything we eat or drink. Wholesome food and drink having good colour, smell, taste and touch are pleasing to senses and conducive to health, if taken in accordance with the rules, are useful for all living beings. If consumed according to rules, they provide fuel to the digestive fire; they promote mental as well as physical strength, complexion, and clarity of sense organs and also give proper energy to the mind.

There are eight factors which determine the utility of food, *karana or samskara* that is method of preparation or processing is one of the important factors¹.

Need of study: In ancient *Ayurved* texts, classification of food substances along with their properties is explained. Methods of preparations of many recipes are also described with their utility in various conditions. But now a day's many food substances which are not mentioned in *ayurvedic* texts are in practice. Their combinations, processing methods are also different. Consumption of these food substances are creating many disease conditions. Hence it is important to study the processing methods described in ancient texts as well as which are in practice today and understand the effects

of these methods in the properties of foods and ultimately on human health.

Present topic deals with the processing methods described in *ayurveda* as well as practiced in present era and their effect on the properties of the food substances.

Definition of Karana or Samskara:

Definition of *karana* is *kriyate yatkaranam*. *Karana* (processing, preparation) is the making or refinement of the natural products which means imparting other properties.

Types of *Samskara*: *Samskaras* given in the ancient texts are - processing with the help of water processing by using any kind of heat, purification or cleaning, churning, effect of particular geographical location, effect of particular time, infusing, trituration, effect of utensil etc².

Samskara is the synonym of *karana*. Properties of food changes because of processing. The constituents which are not beneficial to body can be eliminated and those which are beneficial can be sustained or modified by processing.

Description of samskaras in detail:

1. **Jalatomyog:** Processes by using water-
 - i. **Cleaning** with water- physical impurities are removed,
 - ii. **Soaking** in water - the food substance becomes soft, water gets into the space between the molecules subsequently the size increases,

iii. **Steaming, Boiling** - Cooking using water makes the substance digestible as the composition of the substance is altered.

iv. **Blanching**- Sometimes substance is placed in pre boiled water which is called blanching. In blanching outer covering of the substance becomes soft and can be removed easily.

2. **Agnisamyog**: processing by using heat.

These can be roasting, boiling, grilling, frying, smoking etc.

- **Roasting**: where indirect heat of a hot utensil is given to the substance. In this process the water content of the substance gets evaporated and the binding of molecules is loosened. Hence in texts it is given that by roasting substance becomes *laghu* that is easy to digest.

- **Boiling**: Instead of direct heat indirect heat is used as the substance is boiled in water. In this process due to heat the distance between molecules is increased as well as water gets inserted into this space making the substance soft. In this process substance gets pre-digested.

- **Grilling**: direct heat is given to the substance by which a large amount of water content is evaporated and the substance is pre-digested and becomes *laghu*.

- **Frying**: this process can be done with little oil that is shallow frying or with more oil that is deep frying. Indirect heat of oil or ghee is given. In this process due to heat the distance between molecule is increased and oil or ghee occupies that space. Because of this the substance becomes crispy on outer layer and soft inside if fried appropriately. Due to oils or ghee taste of the substance is enhanced but at the same time digestibility is hampered, the substance becomes *guru* that is heavy to digest.

- **Smoking**: Direct heat of the smoke is given. In this process outer layer of the substance is charred altering the taste of the substance.

All these processing alters the properties of the substance and desired properties are achieved.

3. **Shouch**: ³Cleaning or purification.

In this process impurities or unwanted properties are removed either manually, by sieving, or by washing the substance with water, or by adding some substances which can counter the undesirable property.

4. **Manthan**: Churning of the substance is done. In this process heat is generated, particles are separated and at the same time air is inserted in the space in between the particles. Due to this process the substance becomes *laghu* that is easy to digest.

5. **Desha**: Geographical conditions have effect on properties of the substances. Climatic conditions of that particular place like temperature, humidity etc alters the properties.

6. **Kala**: Seasonal variations, ripening season of the substance, storage duration definitely effects the properties of the substances.

7. **Bhavana**: It is a process in which the substance is triturated with some other substance in order to enhance

the properties or to remove the undesirable properties of the substance.

8. **Bhajana**: Utensils used for preparation, storage effects the properties of the substances. Metals, glass, plastics, Teflon coated etc reacts with the substances and changes the properties of the substances cooked in them or store in them.

Processing of food from modern perspectives:

Cooking is the process of producing safe and edible food by preparing and combining ingredients, and (in most cases) applying heat. Cooking is a means of processing food, without which many foods would be unfit for human consumption.

Purpose of food processing:

Safety

Raw foods such as meat, fish and eggs, may harbour food poisoning bacteria, which if consumed are likely to cause illness. Food processing will prevent many food borne illnesses that would otherwise manifest if the raw food was eaten.

Digestibility

The fundamental reason we consume food is to extract the vital nutrients that different foods contain to allow our bodies to function properly. This is achieved by digestion, where foods are broken down in the body into a form that can be readily absorbed. However, many of the nutrients contained in foods are not readily accessible prior to cooking and thus, cannot be easily digested by the body. For example, the enzyme amylase (found in the mouth and intestine) breaks down the polysaccharide starch into its monomer glucose constituents, which can easily be digested by the body.

Edibility

The desire to eat is primarily driven by the body's need for nutrition, with the intake of essential nutrients being indispensable for life. Cooking can cause changes in the colour, flavour and texture of foods which are generated through an intricate series of physical and chemical changes that occur when foods are heated. For example, roasting potatoes initiates a series of changes that makes them edible, as well as attractive in colour and taste by generating a golden brown colour, invoking a natural sweetness and producing a crisp shell and a soft internal texture.

Types of food processing according to modern practices:

⁵The fundamental types of cooking methods practised across the world are listed below.

Frying

Frying is the cooking of food in oil or fat. Usually, foods that have been fried have a characteristic crisp texture. This is because oils and fats can reach higher cooking temperatures than water, which results in the food being seared. There are several different types of frying, which vary by the amount of fat / oil required the cooking time and the type of cooking pan:

1. Stir-frying – a frying pan or wok is used to cook foods at a very high temperature, in a thin layer of fat. The food is fried very quickly, during which time it is stirred continuously to prevent the food from burning.
2. Deep-frying – A large, deep pan or deep-fat fryer is half-filled with fat and heated. Food is immersed in the fat for a few minutes, then removed from the fat and drained.

3. Shallow-frying – a large, shallow pan is filled with a layer of fat deep enough to cover about one third of each piece of food to be fried. As with deep-frying, the fat is heated prior to the food being added to the pan. After a few minutes cooking, the food is removed from the pan and drained.

When heated, fats are modified by the combination of the oxygen in the air and the increasing temperature. The most visible modifications are an increase of the coloration (browning) and the viscosity, the apparition of foam and the formation of off-flavours. The smoke point of an oil or fat is the temperature at which it gives off smoke. The smoke point generally refers to the temperature at which a cooking fat or oil begins to break down to glycerol and free fatty acids.

Baking

Baking is the process of cooking foods in the dry heat of an oven. During baking, moisture within the food is converted to steam, which combines with the dry heat of the oven to cook the food.

Boiling

Boiling is the cooking of foods in a liquid (e.g., water, milk or stock), which is at boiling point.

Blanching is a very similar cooking technique to boiling and involves immersing food into a boiling liquid for a very short period of time, before being removed and plunged into ice water to stop the cooking process.

Simmering

Simmering is also a similar cooking method to boiling, except that the food is cooked in a liquid, which is held below boiling point. The simmering point of most liquids is between 85-95°C, and compared to boiling, is a gentler, slower method of cooking

Poaching

Poaching is a comparable cooking technique to simmering, except that the temperature of the liquid the food is cooked in is slightly cooler than simmering point (around 70-85°C). This makes poaching an ideal method of cooking fragile foods such as eggs and fish.

Grilling

Grilling is the cooking of food using a direct, dry heat. There are several sources of dry heat that may be used for grilling including; charcoal, wood, gas or electric heated grills

Steaming

Steaming is the cooking of foods by steam. Steam is generated by boiling water, which evaporates and carries the heat to the food.

Roasting

Roasting is the cooking of food using dry heat. This may include cooking in an oven, or over an open flame. Normally, the food is placed in a roasting pan, or rotated on a spit to ensure an even application of heat.

Pressure cooking

Cooking in a sealed vessel that does not permit air or liquids to escape below a preset pressure, which allows the liquid in the pot to rise to a higher temperature before boiling.

Microwaving

Cooking in microwave is quick compared to traditional methods. It uses electromagnetic waves, which are absorbed

by water, sugar and fat in the food and resonates and food form is converted.

Fermentation:

In this process the food substance is first cleaned manually, sieved, and then soaked in water for 3 to 4 hours and then grinded finely and then kept overnight for fermentation. In this process particle size is reduced as well by keeping it overnight air gets accumulated in the form of bubbles and the substance becomes fluffy, at the same time taste of the substance also changes and it becomes sour.

Changes occurring in food due to processing:

Heating causes a complex series of physical and chemical changes to occur. These changes vary depending on the type of food being cooked and the method used to cook it. The changes may be advantageous e.g., improving the flavour, texture and colour of the food, or they may be disadvantageous e.g., reducing the nutrient value of the food, or the generation of undesirable compounds.

The main physical and chemical changes that occur during the cooking of foods are discussed below.

Flavour

Caramelisation

Caramelisation produces the desirable flavours. The caramelisation reaction occurs when foods containing a high concentration of carbohydrates are cooked at high temperatures using a dry-heat e.g., roasting peanuts, setting-off a chain of chemical reactions.

Maillard reaction

The Maillard Reaction is essentially a chemical reaction between an amino acid and a sugar such as glucose, fructose or lactose. Usually, heat is required to start the reaction that causes a cascade of chemical changes, which, ultimately, result in the formation of a range of flavour and colour compounds.

The cooking methods that may result in the Maillard reaction are frying, baking, grilling and roasting.

Starch degradation

Starch is a common form of carbohydrate, composed of several thousand glucose units, linked together by glycosidic bonds. When foods containing starch are cooked, the heat can break the glycosidic bonds linking the glucose units together and effectively break-up the polysaccharides to release the glucose monosaccharide's. This imparts a natural sweetness to the cooked food.

DISCUSSION

Samskaras described above are mentioned in *ashtouaaharvidhi visheshayatan* which are the factors on which it depends that whether a food substance is going to be beneficial for health or not. And to make it beneficial *acharyas* have given these methods of processing's. For example a substance is heavy to digest because of its properties but by roasting it can be transformed into digestible. Hence *samskaras* can change the properties of food according to the requirement of individual need. In order to transform the food substance as per need of individual constitution particular *samskara* can be chosen. For example if a person is having characteristic like excessive *rukshatva* (dryness), *Ushnatva*

(heat) in the body then in order to pacify these characteristics one can choose *samskaras* like frying in ghee of food, adding ghee to food, soaking in water before cooking etc.

According to modern perspectives processing techniques are used for the preservation of food, to increase the digestibility, to enhance the colour and flavour of the food in order to increase the appearance of the food and ultimately to increase the appetite and they reduce the cooking time but, becoming a root cause for various diseases.

Microwaving the food causes the water molecules in the food to resonate at very high frequency which cooks food instantly and saves time but, it alters the chemical structure of the food at the same time. According to the traditional method of cooking prescribed by *Ayurveda*, gradual cooking helps the food to become more digestible, which is not achieved by microwaving. The plastic containers are used to cook food in microwave many a times. Another problem with microwave ovens is that carcinogenic toxins can leach out of plastic and paper containers/covers, and into the food.

The January/February 1990 issue of *Nutrition Action Newsletter* reported the leakage of numerous toxic chemicals from the packaging of common microwavable foods, including pizzas, chips and popcorn⁴. Chemicals included polyethylene terphthalate (PET), benzene, toluene, and xylene. Microwaving fatty foods in plastic containers leads to the release of dioxins (known carcinogens) and other toxins into food.

Bhajana (Patra) - Metal pans enhance food quality by adding ions of minerals to the food prepared. But the cooking utensils which are being used now days, which heat up too quickly and are coated with Teflon material, are known as carcinogenic to humans. Heating the Teflon coated pans at high temperatures cause release of bio hazardous gases like PFOA as well. It is known to be associated with thyroid disorders.

CONCLUSION

To conclude one can definitely say that *samskaras* or processing techniques are in practice are age old. In the begging of the civilisation man used to roast the meat of

animals to soften it and to make it chewable, slowly he came to know that it taste better after roasting. Ayurveda has thought about *samskaras* in detail. How the different *samskaras* can change the characteristics of the food according to the requirement of body are described in detail. Again to eliminate the unwanted characteristics was also given in detail. It was clearly mentioned that any food substance beneficial to body or not is depends on the *ashtouaaharvidhi vishayatana* and *samskara* is an important factor of them.

As the time progressed many newer processing techniques evolved with the newer science discoveries like Pressure cooking, various types of ovens – grilling, barbecues, microwave cooking, non-stick cook wares, plastic utensils for cooking, adding synthetic preservatives, adding synthetic taste and flavor enhancers etc. At the same time many newer disorders are also noticed. These new processing techniques changes the chemical constitution of the food substance which has undesirable effect on their characteristics ultimately making them unhealthy.

Subsequently *samskaras* mentioned in the *ayurvedic texts* were useful for the enhancing the properties as well as eliminating the undesirable one. But processing techniques which are in practice today does not contribute to the health enhancing qualities of food or remove the undesirable one.

REFERENCES

1. *Charak vimansthana* chapter 1, shloka no.21 by Dr. P.V.Sharma , chauhambha orientalia page no. 20
2. *Susrut samhita , sutrasthana* , chapter no. 46, shloka no . 445-447 by Vd. D.B. Borakar, Raghuvanshi Prakashana, page no. 250
3. *Ayurveda Aahar* chapter 11, by Dr. P.H.Kulkarni, page no. 75
4. *Nutrition Action Healthletter*, January 1, 1990 | Lefferts, Lisa Y.; Schmidt, Stephen | Copyright
5. Swayampakgharatil vidnyan chapter 3, 5 by Dr.Varsha Joshi ,pg no. 37,46.
6. www.google.com
7. *Charak vimansthana* chapter 1, shloka no.21

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