

# The Role of Jaggery in Modern Consumer Food Habit - A Review

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## Abstract

Sugarcane has mainly three processed products viz., Sugar, jaggery and Khandsari of which sugar is a strategic commodity because it has used world widely. Sugar is used as an additive in various food and beverages consumed daily by the world community. A great need for sugar as a sweetener, but people want a low -calorie sweetener and healthy. It is suitable with which said that sugar is a purified (refined) sugar cane juice after all the vitamins, minerals, proteins, enzymes and other beneficial nutrients discharged. In this health conscious era where healthy food is preferred over normal food, Jaggery plays an important role. It is also called as non-centrifugal sugar. Jaggery had much nutritional and medicinal aspect like its anti-carcinogenic and antitoxic activity. It had proved itself better as it compared to white sugar. In recently sugar consumers turn to other sources of natural sweetener for health issues. In this review briefly describes about the manufacturing process of jaggery, importance of jaggery, nutrients of jaggery and benefits of jaggery.

**Keywords:** sugarcane, jaggery, consumer, nutrition

## 1. Introduction

India is world's largest producer of sugar and sugarcane. In India of the 300MT of sugarcane produced, 53% is processed into white sugar, 36% into jaggery and remaining 11% for cane juice and seed cane (Singh et al., 2011). The methods of converting sugarcane and manufacturing sugar, jaggery and different but a great value is added in the manufacturing of these consumable final products. Further it offers employment opportunity to millions of people. Jaggery is prepared in all parts of the

country. It is also known as Gud, jaggery, vellam and bella.

Jaggery is one of the organic food. Jaggery is prepared by concentrating the sugarcane juice and it is available in the form of solid block and in semi-liquid form. Besides this, the sap collected from some palm trees such as Palmyra palm, (*Borassus flabelliser* L.), coconut-palm (*Cocos nucifera* L.), wild date palm (*Phoenix sylvestris* Roxb.) and sago-palm (*Caryota urnes* L.) is used for preparation of jaggery (Pattnayak and Misra, 2004) for ease of handling, packing and storage. Jaggery in granular form is becoming popular. They by gyroscopic nature of granulated jaggery, product lead to stickiness and caking problems. Jaggery is alternative source of refined sugar. It is a traditional unrefined non-centrifugal. It contain rich important minerals, vitamins and proteins.

Natural and Organic Food segment is amongst the most trending food segments in the country in the recent times. With the change in lifestyle and food habits in the urban population of the country, this segment is set to move as major segment in upcoming times. With the growing awareness of natural and organic farming practices and the various health benefits availing from them, the buying patterns of consumers have found to be shifting towards natural and organic foods.

The majority of Indian population being rural, suffers due to under nutrition and or malnutrition, as the common Indian diet is deficient in nutrition. So, jaggery is very essential need to Indian rural population.

## 2. Review of literature

Chan's (2001) study had substantiated that adult Chinese consumers attitude towards green purchases and purchase intent were greatly influenced by the

man-nature orientation, degree of collectivism, ecological affect and ecological knowledge.

Williams and Hammit (2001) find that consumers believe organically grown produce poses fewer risks to consumers than conventional food produce, specifically, respondents believe that lower-pesticide-related mortality risks are associated with the consumption and production of organically grown producer.

Lockie et al., (2004) reported that, consumers who are concerned about natural foods, the sensory and emotional appeal of food and more likely to engage in green consumption practices are more likely to have greater consumption of organic food.

Leire and Thidell (2005) indicate, 20-50% of the consumers give priority to environmentally related issues of the products they purchase. However, it is also stated that consumers are often found to overestimate their use of product-related environmental information (Asikainen, 2000; Bjurk, 1997).

Yee et al., (2005) stated that, food safety represents consumers' concern regarding residues in food resulting from chemical sprays, fertilizers, artificial additives and preservative which is often linked to farming methods. Similarly, food safety incorporate other elements, such as microbiology safety and animal disease related safety issues (e.g. bovine spongiform encephalopathy, food and mouth etc.) the scare research on food safety in terms of pesticide residues, hormones and natural toxins (Canavari et al., 2002, Honkanen et al., 2006).

Naspetti and Zanolli (2006) were reported that, Nutritional content is a quality aspect that consumers link to personal health. High content of vitamins, more nourishing meals and a healthy diet were reported as reasons for purchasing organic food by 4%-7% of regular organic food consumers.

Mostafa (2007) indicates, personal habits and lifestyles of consumers in the US and Western, Europe are becoming more environmentally responsible; yet Eastern countries, such as Egypt, are just at the stage of green awakening.

Moisander (2007) indicates, environmental awareness increases especially in western markets, yet there are still barriers to the green consumption styles arising from the cultural, infrastructural political and economic circumstances.

Nina Michaelidou and Louise M. Hassan (2007) in this paper entitled, the role of health consciousness, food safety concern and ethical identify. On attitudes and intention within the context of organic produce. In this findings indicate food safety as the most important predictor of attitude while health consciousness appears to be the least important motive in contrast to findings from some previous research. In addition ethical sol – identify was found

to predict both attitudes and intention to purchase organic produce, emphasizing that respondents identification with ethical issues after attitude and subsequent consumption choices.

Paco et al., (2009) confirmed that there existed a relationship between environmental values, attitudes and behaviors, and that these can be linked to green consumer's behavior too.

Lee (2009) study found that to motivate based female adolescent consumers make environmentally friendly purchases, marketers need to use emotional appeals, reiterate on individual responsibility of protecting the environment and provide peer networking facility to spread good word – of mouth.

Shijiu Yin et.al (2009) the global market for organic food has developed significantly in the past decade. The organic food industry in China is export oriented, with production growing rapidly, although the domestic market remains relatively small. This paper surveys 432 consumers from three cities in China, consequently establishing a log it model to analyses the main factors affecting consumers' choice for organic food. The result indicates that Chinese consumers' intent to purchase organic food is strongly affected by factors such as income, degree of trust in organic food, degree of acceptance of organic food price, and consumers' concern on self-health. This intent is only slightly affected by factors such as consumers' age, education level and concern about environmental protection. Based on the results, the following measures are recommended: reduce the cost of organic food through multiple channels to cut down the market price; establish and perfect the supervision system of organic food; and promote organic food through various channels.

Hee Yeon Kim and Jae-Eun Chung (2011) studied that consumer purchase intention for organic personal care products. This paper found that environmental consciousness and appearance consciousness positively influence attitude toward buying organic personal care products. The addition of past experiences as a predictor of purchase intention and perceived behavioral control as a moderator of the attitude- purchase intention relationship yielded an improvement on the TPB model (TPB – Theory of planned behavior).

Farah Ayuni shafie and Denise Rennie (2012) Studied that consumer perception towards organic food, in this paper said that food safety, human health and environmental concern along with sensory attributes such as nutritive value, taste, freshness and appearance influence organic food consumers preferences. Demographic variables may define organic consumers but the correlation is not very significant. Consumers also associate organic food with natural process, care for the environment and animal welfare and the non-use of pesticides and

fertilizers. Premium price continues to suppress organic food consumption. Understanding the grounds of increasing level of organic food consumption such as motivation as the most critical in understanding the potential of the organic food to become a genuinely mainstream market.

Nawel Ayadi and Alexandre Lapeyre (2014) this research examines the role of consumers' willingness to pay (WTP) in the purchase decision process for a green product and investigates the moderating effects of two types of framing; price and ecological message claim. Using an experimental design. The results reveal a mediating effect of WTP on the relationship between consumers' perceptions and purchase intentions. Furthermore, a price framed in aggregate terms reinforces the positive effect of WTP on purchase intention. The mere presence of an ecological message claim also enhances the relation between WTP and purchase intention. This research proposes ways marketers can promote their green products. The results encourage the use of ecological message frames of prices in an aggregate form to enhance consumers' purchase intentions through WTP.

### 3. Objectives

The study was conducted with some specific objectives

- To study the manufacturing process of jaggery.
- To study the importance of jaggery.
- To study the nutrition level of jaggery.

### 4. Research Methodology

- The primary data was collected from various farmers and various places to processing of jaggery and importance.
- The secondary data were collected through newspaper, magazines, books, journals, conference, proceeding, to jaggery nutritional value.
- It is review based study aims at exploring the jaggery.

### 5. Processing of Jaggery

Jaggery manufacturing is done on a small scale by a group of farmers. The juice is extracted from fresh sugarcane. Then it is filtered and boiled in wide, shallow iron pans with continuous stirring and, simultaneously soda (or) bhindi juice is added in required quality. While boiling brownish foams come at the top which are continuously removed to get golden yellow color of jaggery. The consistency

of the juice becomes thick and then it is poured into the small to medium sized iron or aluminum cans where blocks of jaggery are formed after cooling. Size of the jaggery varies from 1 kg to 12 kgs. Finally, these blocks are packed in gunny bags from 100 kgs of sugarcane, 10 kgs of jaggery is made. The process flow chart is as under.

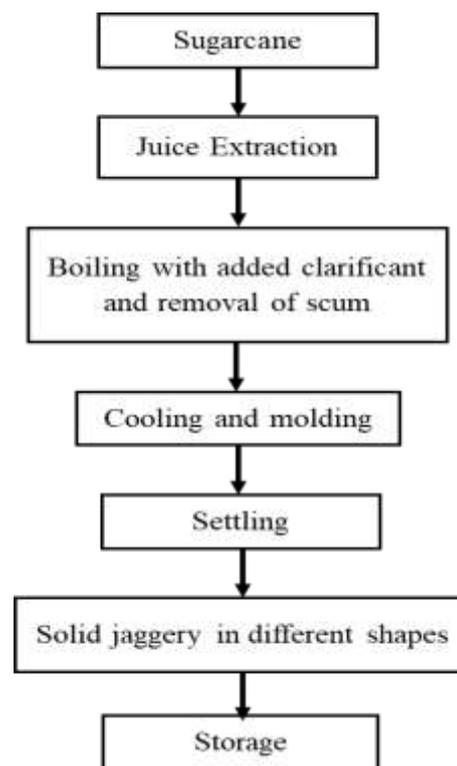


Fig. 1 Processing of Jaggery

### 6. Importance of Jaggery

Magnesium present in jaggery strengthens our nervous system, helps to relax our muscles gives relief from fatigue and takes care of our blood vessels. It also along with selenium acts as an antioxidant property scavenges free radicals from our body. The potassium and low amount of sodium present in it maintain the acid balance in the body cells and also combat acids and acetone and control our blood pressure. It is rich in iron and helps to prevent anemia. It also helps to relieve tension and takes care of asthma as it has anti-allergy properties. It is good for migraine and at the time of post pregnancy it has great benefits to perform to remove all clotted blood from the body of women within post 40 days after the birth of a baby. The preventive ability of jaggery on smoker's smoke-induced lung lesions suggest the potential of jaggery as a protective food for workers in dusty and smoky

atmosphere even for those who are engaged in woolen industries, the wool dust clogged in the food pipe could be cleared with jaggery. Thus, jaggery helps to breathe easier and counter pollution problems. It has moderate amount of calcium, phosphorous and zinc so it helps to optimum health of a person along with all its benefits, purifies the blood and prevents rheumatic afflictions and bile disorders and thus helps to cure jaundice. Major states producing jaggery are Uttar Pradesh, Tamil Nadu, Maharashtra, Andhra Pradesh, and Karnataka. The increasing production trend and market value of jaggery has much significance to learn about people liking towards jaggery. As the Urban people become more health conscious, demand for jaggery will be more not as a sweetener, but as health supplement other uses.

## 7. Nutritional value and uses of Jaggery

It is rich in important minerals, such as calcium 40-100mg, Magnesium 70-90mg, potassium 1056gm, phosphorus 20-90 mg, sodium 19-30m, Iron- 10-13mg, manganese 0.2-0.5mg, zinc 0.2-0.4mg. Vitamins such as vitamin A- 3.8mg, Vitamin B1- 0.01mg, Vitamin B2- 0.06mg, Vitamin B5- 0.01mg, Vitamin B6- 0.01mg, Vitamin C-700mg, Vitamin D2 – 6.50mg, E-111.3mg, Vitamin pp- 7.00mg and Protein-250mg per 100gm of jaggery, which can be made availability to the masses to mitigate the problems of mal nutrition and under nutrition. The micronutrients present in the jaggery possess antitoxic and anti-carcinogenic properties. It has moderate amount of calcium. A good quality jaggery contains more than 70% sucrose, less than 10% of glucose and fructose, less than 50% minerals and less than 3% moisture. So it helps to optimum health of a person along with all its benefits purifies the blood and prevents.

## 8. Problem faced by consumers

- Jaggery is costlier than white sugar.
- Inconvenient storage.
- More consumption than white sugar.
- Less sweetness than white sugar.
- No. of. Brand it less than white sugar.

## 9. Conclusions

Sugar and jaggery are the main sweetening agents which are added to beverage and food for increasing palatability. Over the years, food habits of human beings have been greatly influenced by research and developmental activities and also due to their consciousness. Despite witnessing pressure of

industrialization, the jaggery industry has flourished in different states of the country viz. Uttar Pradesh, Tamil Nadu, Karnataka, Maharashtra and Andhra Pradesh. The increasing trend of their production is of much significant to learn about peoples' linking towards jaggery in rural areas mainly due to its nutritional and medicinal values. Due to its nutritional and medicinal value, the jaggery has great export potential in the world.

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