

Sugarcane juice for

human health and opportunities of employment generation

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Sugarcane can be eaten as it is or consumed in the form of juice. Sugarcane juice is extracted from the cane and is nutritious, refreshing and contains naturally occurring sucrose which is metabolized by the stomach. A glass of sugarcane juice with lemon and ice makes a popular drink which is good for health and depleting levels of energy. Sugarcane juice contains high polyphenols, which are powerful phytonutrients with the qualities of antioxidants and loaded with vitamins and minerals. Sugarcane juice helps to strengthen liver and is thus suggested as a remedy for jaundice. Sugarcane juice has a strong defence against cancer, especially breast and prostate cancer. Diabetic patients can also consume sugarcane juice because of low glycemic index (GI). Demands of sugarcane juice can easily be seen by the huge crowd rounding the roadside vendors, waiting a glass of Sugarcane juice. Installation of Sugarcane juice bars/outlets/stalls within the Airports, Railway Stations, Bus Stands, Hospital campuses, Shopping Malls, Market complexes, educational institutes, different government offices, IT Parks, Kishan Mandies, Parks, Tourist Spots, Religious places, etc by Government/Private companies/Co-operatives/Individual farmers can drastically change the scenario and having huge opportunities of employment generation as well as increase the sugarcane farmers income.

Key words: Employment generation, Human health, Sugarcane Juice

SUGARCANE (*Saccharum* spp. *hybrid*) is one of the important cash crop used mainly for production of sugar and cultivated commercially in about 80 countries in about 27 million hectares in the world. India, Brazil and China contributed about 63% of world's cane production and India alone contribute about 29%. Sugarcane is generally grown in almost all the states in India. In addition to that a lot of the sugarcane grown in India is first used to make gur (jaggery) and khandsari (unrefined or brown sugar). The second largest agro-based industry after textile, is sugar industry, which provides livelihood to around 6 million sugarcane growers and 10 lakh workers employed in sugar mills and jaggery units in India. Sugarcane can also be

eaten as it is or consumed in the form of juice. In Indonesia, sugarcane juice is called *minuman sari tebu* and is one of traditional drink commonly sold on street-side. The sugarcane plant has been cultivated in Java since ancient times. The earliest record came from a 9th-century inscription dated from Medang Mataram period that describes a sweet drink called *Nalaka Rasa* which translate as sugarcane juice. Sugarcane juice, called *nyŭc mŭa* or *mŭa đă*, is very popular in Vietnam as a refreshing drink in the hot climate. It is available at small street stalls. Sugarcane juice is also a refreshing drink in Africa. In the eastern region of Madagascar, sugarcane juice is fermented to make an inexpensive alcoholic beverage called *betsa-betsa*. The drink is

popular with locals because it is cheaper than beer. Sugarcane is known to provide energy and glucose to our body and gives us the strength to continue with our work. Sugarcane juice is extracted from the cane and is nutritious and refreshing. Sugarcane juice contains naturally occurring sucrose which is metabolized by the stomach, relieving the pancreas of the need for all that insulin to break it down and convert into useful energy.

Nutritional value of sugarcane juice

Sugarcane juice contains high polyphenols, which are powerful phytonutrients with the qualities of antioxidants. It is also loaded with vitamins and minerals such as calcium, potassium, magnesium, manganese, and iron; along with a



Fig. 1 Sugarcane crushing Machine (Automatic)

complete profile of essential amino-acids that help burn fat and build muscle. Some of these include pipercolic acid, methionine, tryptophan, α -alanine, and arginine; along with basic amino-acids like histidine, lysine, arginine, and tryptophan. Sugarcane juice is alkaline to the body and most diseases cannot live in an alkaline environment. The juiced Sugarcane per serving (28.35 g) contains Energy-111.13 kJ(26.56 kcal), Carbohydrates-27.51 g, Protein-0.27 g, Calcium11.23 mg (1%), Iron 0.37 mg (3%), Potassium 41.96 mg (1%), Sodium 17.01 mg (1%).

Health benefits of sugarcane juice

Sugarcane juice contains high amount of Vitamin B2, Vitamin B1, Vitamin C, Vitamin B6 and inorganic salts such as iron, phosphorus, calcium and organic acids such as fumaric acid, succinic acid, citric acid and malic acid. Health benefits of drinking Sugarcane juice are listed below;

An energy drink - Sugarcane juice is rich in carbohydrates, protein, iron, sodium, potassium and other essential nutrients that make it the ideal energy drinks. A glass of sugarcane juice with lemon, peppermint(*Mentha piperita*) and ice makes a popular drink which is good for health and depleting levels of energy. It builds up plasma and body fluids and helps counter dryness and fatigue.

Prevent cancer- Maybe you have not heard this before; the efficacy of sugarcane juice was a strong defense against cancer. It is considered an

alkaline forming food because of the high concentration of calcium, magnesium, potassium, iron, and manganese. Diseases like cancer cannot survive in an alkaline environment and that's why it is effective in fighting cancer, especially prostate and breast cancer. The content of flavonoids in sugarcane juice inhibits the growth of cancer cells in the milk glands.

Remedy for jaundice- According to Ayurveda, sugarcane juice helps strengthen your liver and is thus suggested as a remedy for jaundice. It also protects the liver against infections and helps in keeping the bilirubin levels in control. This is one of the reason that doctors' advice jaundice patients to drink sugarcane juice.

Safe against pregnancy- Furthermore, sugarcane juice is also good for the health of pregnant women. So, pregnant women are advised to include this drink in her diet. Sugarcane juice contains a lot of folic acid and vitamin B9 which are useful to avoid birth defects. In addition, cane juice is able to minimize the problem of ovulation thereby increasing the potency of fertilization.

Helps in the growth of bones and teeth- If your child consume sugarcane juice, then you do not have to worry about tooth problem. Sugarcane is rich in potassium which is useful for building your skeleton including teeth and bones. So, sugarcane juice should very well consumed by small children.

Maintain weight- Sugarcane does not contain any fat. Its content is

100% natural water. Sugarcane juice has the ability to fight against bad cholesterol. We know that bad cholesterol (LDL) is one of the causes of weight problems. Sugarcane juice also increases metabolism so that the body functions optimally. Good metabolism can also help you to lose weight normally.

Solving constipation and stomach burn- Ayurveda suggests that sugarcane juice exhibits laxative properties thereby improving bowel movement and relieving constipation. Sugarcane juice also has alkaline properties which mean it's good for treating acidity and stomach burns.

Eliminating toxins from the body- Regular drinking of Sugarcane juice can eliminate toxins from the body and fight against harmful foreign substances.

Improve immunity- As it is rich in antioxidants, sugarcane juice is very important in boosting immunity. This drink works against diseases such as digestive diseases and liver problems. In addition, these antioxidants are also useful for neutralizing bilirubin.

Avoid premature aging- Sugarcane juice can prevent premature aging. It contains flavonoids, antioxidants, and phenolic compounds. These substances provide benefits such as soft and luminous skin, and has a stable humidity.

Treating acne- Sugarcane juice is known to remove powerful acne naturally. So, if your face has lot of acne, use sugarcane juice masks regularly. In a short time you will see improvement. Mixed sugarcane juice and multani mitti to form a moderate concentration. Apply this mask on face and neck carefully and wait for 20 minutes, then clean the face and neck using a wet towel. To get the good results at least use this mask for a week on a regular basis. Sugarcane juice is containing alpha hydroxy acid (AHA), such as glycolic acid which is useful to improve cell work. The sugarcane juice will remove dead skin cells and the contents of your acne.

Prevent bad breath and tooth decay- If you have trouble with bad breath and tooth decay, immediately

grab sugar cane juice as your home remedy. Sugarcane juice contains phosphorus, calcium which is responsible for forming tooth enamel.

Prevents heart and kidney diseases- It also prevents heart diseases and stroke as it helps decrease the levels of cholesterol and triglycerides.

Sugarcane juice is a diuretic which means that it helps treat urinary tract infections, kidney stones and ensure proper functioning of the kidneys.

Prevent DNA damage- Drinking of Sugarcane juice regularly will keep your DNA well and avoid the damage caused by radiation exposure. It is rich in antioxidants that prevent oxidative degradation of fat and lipids. It also guards and fortifies from DNA damage.

Treating fever- Many people do not know this benefit, but this is true. Sugarcane juice will prevent protein loss in the body so you do not experience fatigue. It will make your fever completely healed.

Cures febrile disorders- Sugarcane juice has been discovered to be good for those people who are struggling with febrile disorders. Febrile disorders result in fevers, which can lead to seizures and loss of proteins in the body. It is quite common in infants and children. Sugarcane juice helps in compensating the lost protein and helps in recovery.

Strengthens organs- All organs of the body need a balanced power to be aligned to work with other organs. The essential sugar from sugarcane juice will help the organs to gain strength like sensory organs, reproductive organs, and brain.

Use as digestive tonic- Digestion is the inlet and discharge of food. The organ health is very important to be maintained. Sugarcane juice contains potassium which is useful for balancing the abdominal pH and helps the digestive secretion.

Treating sore throat- Feeling itchy in the throat, you can drink a glass of sugarcane juice that has been mixed with black salt. The high vitamin C content is a strong reason for treating sore throats.

Helpful for healthy nails-

Deficiency of nutrients in the body can easily be noticed by looking at the health condition of your nails. If you have brittle discolored nails that have white spots on them, then it's time to add sugarcane juice to your diet. It contains everything to give you those strong shiny nails that would look pretty even without a nail polish.

Heals wounds- Sugarcane juice contains sucrose which is useful for wound healing naturally. Here, you can also use the juice on the wound on the outside of the skin.

Health risks of sugarcane juice

The benefits of sugarcane juice are many and does not give any adverse effects on health, if it is extracted in a hygienic condition and consumed as soon as it is extracted because it tends to get oxidized within 15 minutes. Drinking a glass of sugarcane juice is very easy for you, but if it is not clean then it can cause diarrhea for you. Remember! Sugarcane juice is the best place for the development of microorganisms. Do not drink more than two glasses a day unless you have jaundice. Any surplus can be harmful to our body. Be safe and drink it keeping the hygiene conditions in mind.

Demand of sugarcane juice

People across the globe look for drinks that quench their thirst. They also expect naturally made drinks like sugarcane juice which is extracted from naturally grown sugarcane stalks. Over the year, you can notice many roadside vendors who sell sugarcane juice and get to see huge crowd rounding the stall waiting to have at least one glass of sugarcane juice, no matter how much you charge a glass of sugarcane juice, people always think it is worth spending money. If the above benefits of sugarcane juice can be displayed near the stall, the demand for sugarcane juice will suddenly be increased and people's choice will magically changed from chemical rich drinks to sugarcane juice. None can deny the fact that sugarcane juice is so popular and we come across sugarcane juice bars/outlets/vendors/stalls frequently.

Employment opportunities in sugarcane juice business

Some people expect huge profits by investing money in a big business set up but some people invest a little amount of money that too in a risk-free business and they gradually keep adding investment to improve business and ultimately aim for huge profits. Sugarcane juice business can be started with very little investment and on the other hand growing potential in this business is huge. Some people think that Sugarcane juice business falls under seasonal business because demand for sugarcane juice is during summer only. But it is not true. Sugarcane juice business is running year the round as the demand for sugarcane juice is high during summer and medium during other seasons. There are many people in the country who are employed in sugarcane juice business as a best money making business as it is more profitable with less investment of money. The below mentioned points are to be kept in mind before starting sugarcane juice business.

Selection of location for sugarcane juice bar/outlet/stall: I have never seen or heard any single permanent sugarcane juice bar/outlet/stall within the Airports, Railway Stations, Bus Stands, Hospital campuses, Shopping Malls and Market complexes, where people crowd round the clock. Peoples generally take different drinks, always not by choice, but also due to availability of such stalls/outlets. In addition to that any places such as campuses/premises of different educational institutes, government offices, IT Parks, Kishan Mandies, Regulated Market complexes, Parks, Tourist Spots, Religious places, etc. can be effectively selected for installing sugarcane Juice bar/outlet/stall. So selection of site is very important for maximum profit and employment generation. 50-100 sq.ft. place is sufficient to run the business smoothly.

Purchase a sugarcane crushing machine (automatic): Now time for mechanization and gone those days where people used to put a lot of physical energy to extract sugarcane juice. Now various sugarcane

crushing machines (Fig 1) are available in the markets that helps to get sugarcane juice in no times and are easy to install and maintain hygiene conditions. You should buy a proper sugarcane crushing machine that runs without much troubling and offers anytime service in case of emergency. It is also advice to buy a machine that consumes less electricity and make sure that you are going to spend money on latest machine.

Set up sugarcane juice bar/outlet/stall: You are advised to setup good looking stall to attract customers. You should also give top most priorities for cleanliness and hygiene conditions otherwise people will hesitate to buy sugarcane juice from your stall. You should install a LED TV for all time displaying the benefits of drinking sugarcane juice.

Ensure good quality sugarcane supply- You should make a contract with sugarcane farmers so that he/she delivers sugarcane on a daily/weekly basis. Sugarcane growers can easily supply the sugarcane as per the daily or weekly demand, as because they get assured higher price for their produce and assured market. Contract should be made at least one year prior to start sugarcane juice bar.

Refrigerators for ice cubes: Ice and Lemon added with Sugarcane juice, during summer months, makes a popular drink which is good for health and depleting levels of energy of the customers.

Eco-friendly glasses to serve sugarcane juice: Important benefits may be printed on Eco-friendly glasses. It is also to be printed on glasses that Sugarcane juice should be consumed as soon as it is extracted because it tends to get oxidized within 15 minutes.

Economics of a model sugarcane juice bar/stall/outlet: Sugarcane varieties produces thicker canes are generally used for juice purpose. A model sugarcane juice bar having 150-200 customers selling 300 glass (Approx.) juice/day (10 hours). The detail calculations are as follows:

- 100 stalk of Sugarcane weighing on an average 1.25 kg each is required to produce 300 glass juice. (Single Cane- 1.25 kg (Avg. weight) produces 3 glass of juice @ 200 ml/

Table 1. Monthly statement of a model sugarcane juice bar

Expenditure				Income			
Particulars	Rate (₹)	Quantity	Amount (₹)	Particulars	Rate (₹)	Quantity	Amount (₹)
Cost of sugarcane stalk	12 per Stalk	100 No. × 30 days = 3000 No.	36,000	Income from selling sugarcane juice days	15 per glass	300 glass × 30 = 9,000 glass	1,35,000
Cost of eco friendly glass, Ice & Lemon	3 per glass	300 No. × 30 days = 9000 glass	27,000				
Recurring expenses including maintenance & depreciation cost monthly (Max.)	15,000 per month	1 month	15,000				
Labour cost (Monthly basis)	10,000 per month per	2 employ-ment/ month	20,000				
Bank EMI (Approx)	7,000 per	1 month	7,000				
Total	month		1,05,000				1,35,000

Net Profit per month ₹ (1,35,000 – 1,05,000) = 30,000

- glass)
- Cost of 100 stalk of Sugarcane weighing on an average 1.25 Kg each is ₹ 1200 only including carrying cost i.e. ₹ 12 per stalk.
- Cost of Eco friendly glass, Ice & Lemon- ₹ 3/glass
- Recurring expenses including depreciation cost monthly (Max.)- ₹ 15,000
- Labour cost (Monthly basis) @ ₹ 10,000/employment for two employments- ₹ 20,000
- Total Sugarcane stalks requirement for running the sugarcane juice bar- 100 stalks (with average weight 1.25 kg) × 365 days= 100 stalks × 365 = 36,500 Sugarcane Stalks
- Sugarcane Farmers get a price of ₹ 10 for each cane- ₹ 10.00 × 36.500 = ₹ 3,65,000
- To produce 36,500 sugarcane stalk, maximum 1.5 acre land is required
- Maximum cost of cultivation of 1.5 acre to produce 36,500 sugarcane stalk- ₹ 1,50,000
- Sugarcane farmers also get assured profit of (₹ 3,65,000 to ₹ 1,50,000) = ₹ 2.15,000 from 1.5 acre land in a year (Ratoon crop extra benefit) (Table 1)

SUMMARY

Sugarcane juice, a magic juice, is

good for human health. People consume it as an energy drink without knowing the diversified health benefits. Proper awareness and frequent publication regarding benefits of sugarcane juice at Government level through different media is essential for maintaining good health of the people. Diabetic patients can also consume sugarcane juice because of low glycemic index (GI). Demands of sugarcane juice can easily be seen by the huge crowd rounding the roadside vendors, waiting a glass of sugarcane juice. Installation of sugarcane juice bars/outlets/stalls within the Airports, Railway Stations, Bus Stands, Hospital campuses, Shopping Malls, Market complexes, educational institutes, different government offices, IT Parks, Kishan Mandies, Parks, Tourist Spots, Religious places, etc. by Government/Private companies/P-P-P model/Co-operatives/Individual farmers can drastically change the scenario and having huge opportunities of employment generation as well as increase the income of the sugarcane growers in India.

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