

Advanced Technique of Preparing Jaggery without Contamination

Project Report
Submitted by

Dr. Sourabh Jain
Assistant Professor
Shri Ram College
Muzaffarnagar

funded by

Gulshan Polyols Ltd.
Muzaffarnagar



**Shri Ram College
Muzaffarnagar**


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar


Principal
Shri Ram College
Muzaffarnagar

35/1

Registered Office:
9th Km, Jansath Road,
Muzaffarnagar - 251001
Ph. 0131-3201231
Fax: 0131-2661378


GULSHAN
POLYOLS LIMITED

Ref. GRL/11/7/T/77

Date 12/07/2019

To,

Dr S C Kulshreshtha
Chairman
Shri Ram Charitable Trust
Muzaffarnagar

Dear Sir,

On request of the District Administration, Muzaffarnagar and subsequent discussions taken place, we are herewith sanctioning an amount of Rs. 2 lacs for "Gud Mahotsava". You are requested to allot this amount to any project or activity related to the event.

The amount is transferred through RTGS to your account at PNB, Industrial Area, Muzaffarnagar. Please acknowledge the receipt of the amount.


Thanking you,


Yours faithfully
For M/s Gulshan Polyols Ltd.



(Anil Singh)
General Manager (F)

CERTIFIED


Principal
Shri Ram College
Muzaffarnagar


Co-ordinator
ICAC, Shri Ram College,
Muzaffarnagar



35/2

श्रीराम चैरिटेबल ट्रस्ट Shri Ram Charitable Trust

1298, सर्कुलर रोड, मुजफ्फरनगर - 251001 (भारत)
1298, Circular Road, Muzaffarnagar - 251001 (INDIA)

SRCT/ MZN/ 2019-20/432

Dated: 15.07.2019

Dr. Aditya Gautam
Principal,
Shri Ram College,
Muzaffarnagar

Dear Sir,

We received a sum of Rs. 2 lacs from M/s Gulshan Polyols Ltd. This amount may be allotted to following projects:-

1. Need and Development of Geographical Indicator (GI) Tag for Jaggery of Muzaffarnagar, Principal Investigator Dr Vivek Kumar Tyagi, Department of Business Administration, Shri Ram College, Muzaffarnagar, Rs. 1,00,000/-.
2. Advanced Technique of Preparing Jaggery without Contamination, Principal Investigator Dr Sourabh Jain, Department of Biosciences, Shri Ram College, Muzaffarnagar, Rs. 1,00,000/-.

You are requested to expedite the research work.

Thanking you,

Yours faithfully

(Dr S C Kulshreshtha)
Chairman

Copy to:
Controller of Finance, Shri Ram Charitable Trust to release the funds on the request of the Principal.

CERTIFIED

Principal
Shri Ram College
Muzaffarnagar

(Dr S C Kulshreshtha)
Chairman

Co-ordinator
Shri Ram College
Muzaffarnagar

Phone No.: +91-131-3295148, 2620899, 2620565, 2620451 Fax: +91-131-2620890

Utilization Certificate

| S.N. | Detail of sanction of Fund with Project name and Duration | Amount |
|------|--|------------------|
| 1. | 90-Day project on Advanced Technique of preparing Jaggery without contamination, Date of Sanction of Fund- 12-07-2019 as per Sanction Letter | 100000.00 |
| | TOTAL | 100000.00 |

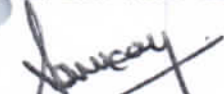
It is Certified that out of Rs. 100000.00 (Rs. One Lakh Only) of grants sanctioned by **M/s Gulshan Polyols Limited** during the year 2019-20 in favor of **Shri Ram College, Muzaffarnagar**, a sum of Rs. 100000.00 has been utilized for the purpose of the project for which it was sanctioned and that the balance of Rs. **Nil** remaining unutilized at the end of the year has been surrendered. The Extra amount (If any) is met out by Shri Ram College.

2. Certified that we have satisfied our self that the conditions on which the grant was sanctioned have been duly fulfilled/are being fulfilled and that we have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercise-

1. Checking of cash book
2. Checking of payment vouchers.
3. Checking of expenses bills.

For Shri Ram College


Secretary

Place: Muzaffarnagar
Date- 10-10-2019


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar

CERTIFIED


Principal
Shri Ram College
Muzaffarnagar

For Goel Rakesh & Co.
Chartered Accountants



Rakesh Kumar Goel
Proprietor
M. No. 071858
FRN : 003374C

Advanced Technique of Preparing Jaggery without Contamination


Jaggery is a traditional unrefined sugar, prepared by processing of sugar cane juice. Jaggery storage conditions are usually unhygienic and culminate in change of colour, texture, taste, hardness and flavor of jaggery. The bacterial microflora were isolated on plate count agar from four jaggery samples collected at different stages of stored jaggery. Out of nine isolates, five gram negative rods, one gram positive rod, two gram negative cocci and one gram positive cocci were identified on the basis of morphological, physiological and biochemical characteristics. On the basis of biochemical and carbohydrate utilization test, these isolates were identified as genera of *Alcaligenes*, *Xanthomonas*, *Acinetobacter*, *Enterococcus*, *Corynebacterium*, *Alteromonas*, *Micrococcus* and *Bordetella*. Antimicrobial susceptibility test showed multiple resistance against ten different antibiotics. These microbes may be harmful to humans health who consume jaggery in their diet.

How to tell that the gur/jaggery that you are buying is pure?

With temperatures dipping across the country, it is time to welcome all the warming foods the season has to offer. Jaggery, or gur as it is known in India, is definitely one of them. You will soon find shops, road-side vendors and even thela-wallahs selling this traditional Indian favourite.

How to Tell that the Gur/Jaggery that You Are Buying is Pure?

Jaggery is a sweetener that is made from sugarcane. With temperatures dipping across the country, it is time to welcome all the warming foods the season has to offer. Jaggery, or gur as it is known in India, is definitely one of them. You will soon find shops, road-side vendors and even thela-wallahs selling this traditional Indian favourite. This age-old, unrefined form of sugar is known for its many health benefits; it is an excellent digestive, is known for being a rich source of iron and vitamin C and also helps improve blood circulation to name a few. In addition, gur is known to keep our bodies warm, which is why it is usually recommended to be consumed in the winter months. It's a really good seasonal delight to enjoy if you can get your hands on some quality stuff. But how can you be sure that what you are buying is pure or not? Fret not, as we tell you how to identify good quality jaggery and the parameters to check for its purity. What is jaggery/Gur? Jaggery is a sweetener that is made from sugarcane and is obtained by boiling raw and concentrated sugarcane juice. It is known to be a healthier alternative to white sugar because of a superior nutritional profile. However, both have similar calorie content. Sugarcane juice is boiled for quite a few hours before adding it in the moulds and is further kept to cool off and let it harden. On the other hand, white sugar has to go through crystallization and several other processes in before it is packaged for consumption. Why is this the season to have jaggery? Health experts have always recommended eating jaggery in winter only, considering jaggery produces heat in the body further causing stomach problems. Therefore, one should avoid consuming jaggery during hot days.


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar


Principal
Shri Ram College
Muzaffarnagar

Ways to check for jaggery's purity:

Generally a good quality jaggery should have the right colour, good flavour and hardness. It is imperative to check for its purity anytime you are out buying some for consumption. Here are a few points to keep in mind while buying jaggery.

Points to remember if you are buying jaggery:

Do taste a piece of jaggery; it should not taste even slightly salty. If it does, this may indicate a high concentration of mineral salts. The salty taste can also tell you if the gur is fresh or not, the older it is, the saltier it gets.

If there is any bitterness in the gur or jaggery, it means that it has gone through the process of caramelisation during the boiling process.

Check for any crystals on the jaggery. Presence of crystals indicates that the jaggery may have gone through other processes to make it sweeter.

The colour of the jaggery also plays an important role in identifying purity. Ideally the colour of the jaggery should be dark brown. The yellowish colour in gur may indicate chemical treatment.

Prefer buying hard jaggery; this ensures that there are no additives added while boiling the sugarcane juice. Check for any crystals on the jaggery.

Points to remember after you have bought the jaggery:

Most vendors add chalk powder in jaggery, hence, in order to check for its presence, all you need to do is take a transparent bowl of water and dissolve a piece of jaggery in the water. You will see the powder settling down in the water. There is a chance that artificial colour is used to give jaggery the right colour. Take half a teaspoon of jaggery and add six millilitre of alcohol to it and mix well. Now add 20 drops of concentrated hydrochloric acid. If the jaggery turns pink then it means that artificial colours have been added to this lot.

The humble jaggery, increasingly regarded as a healthier alternative to white sugar, is not necessarily safe if you are buying it without a thought on what is going into it. A recent report by the Cooperation Department shows that a host of chemicals and adulterants go into it in several jaggery-making units.

Jaggery units in Karnataka, particularly in Mandya region, have been using different types of chemicals/additives, including calcium hydroxide, sodium hydrosulphite (hydrose), sodium formaldehyde



Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar



Principal
Shri Ram College
Muzaffarnagar

sulfoxylate (safolite), ortho-phosphoric acid, seashells, baking soda, oil (castor/coconut), and orange-red powder (artificial food colouring), reveals the report submitted recently to the government.

The main purpose behind using these additives is to remove impurities easily and give it the desired colour. Sugar is also added as a thickening agent, reducing the processing time, says the report by Additional Secretary, Cooperation Department. It also notes that some manufacturing units, in contrast, have also been using lady's finger stem and powder as safer alternative clarificants.

Karnataka ranks third in sugarcane cultivation that is concentrated in Belagavi, Bagalkot, Mandya, Bidar, Ballari and Vijayapura districts. Mandya district alone has 532 jaggery manufacturing units with an output of at least 10 lakh tonnes of jaggery a year. Jaggery samples were collected from Mandya, Yeshwantpur and Mahalingapur and tested at the Regional Agmark Laboratory, Guntur. The tests revealed that higher level of sulphur dioxide residue was found in light coloured jaggery samples from Mandya market than the samples collected from Yeshwantpur and Mahalingapur markets. This could be attributed to the excess use of chemicals such as hydrose and safolite. Sodium hydrosulphite (commonly used as a reducing/bleaching agent in textiles, dyeing, leather, paper pulp and other industries) was used as bleaching agent in jaggery manufacturing. These sodium-based chemicals also lead to the reduced shelf life of jaggery, as sodium being highly hygroscopic in nature absorbs moisture from atmosphere that softens the jaggery and makes it mushy.


The sulphur-based chemicals (sulfoxylate) leads to increase in sulphur-di-oxide residue in jaggery. Ortho-phosphoric acid is also used as bleaching agent and when it exceeds the limits, it is harmful.

Vegetable Clarificants

CFTRI, Mysuru, has recommended the use of vegetable clarificants as alternative to chemicals. Indiscriminate use of the chemicals is not only harmful for consumption but also reduces the shelf life of the product forcing the farmers to distress sales within a week from processing, irrespective of the prevailing price in the market.

The demand for jaggery was usually based on colour. Jaggery with light golden yellow colour and firm hardness fetched more price in comparison to other varieties. The next preferred colours were kesari and golden yellow. Dark brown coloured jaggery had the least demand, which the report says in the main reason for chemical additives. On an average, price difference of ₹100 to ₹500 per quintal was found between different varieties of jaggery based on variation in colour and shape.

India accounts for over 70% of the total global jaggery production. India exports jaggery to many countries, including Bangladesh, the U.K., Canada, Chile, Egypt, Fiji, Iraq, Kuwait, Malaysia, Nepal, and the U.S.


Co-ordinator
IQAC, Shri Ram College,
Muzaffarnagar


Principal
Shri Ram College
Muzaffarnagar