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Review on *Ikshu* and its *Vikaras*

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ABSTRACT

After Brazil, India is the world's second-largest producer of sugarcane, which is widely available at a low price throughout the country. In *Usna Pradesh* (hot places), like Maharashtra, Nepal, South India, and Gujarat, *Ikshu* (sugarcane) is abundantly farmed. Ayurvedic science has explained *Ahara Varga Dravyas* and *Aoushadha Varga Dravyas* to get a better understanding of nutritional and medicinal values. Dietary regimens are mentioned in Ayurveda for leading a happy life and healing ailments. *Brihatrayees* explained *Ikshu Varga* as part of the *Ahara Varga*, and it has a very specialised role in therapeutics and pharmaceutical preparations. *Madhura Rasa*, *Brimhana*, and *Vrushya* characteristics exist in *Ikshu*. This provides a strong basis for *Ikshu Vikaras* to be used as an ingredient, binding agent, and *Anupana* in different formulations. *Ikshu* is also known as the king of grasses (*Truna Raja*), as it is sweet (*Madhu Trina*), and also a plant filled with juice (*Maharasa*, *Bhoori Rasa*). In daily routine these could be included under diet regimen because of their nutritional values and even they could prove to be beneficial in cases of diabetics, malnutrition, burning maturation etc. Sugarcane (*Saccharum officinarum*) has been widely known as raw material for white sugar production. Sugarcane juice is nourishing, it is a natural diuretic and cold in nature, so sugarcane juice is one of the best natural coolant drink.

Key words: *Ahara dravya*, *Ikshu Rasa*, *Ikshu Vikaras*, *Sugar cane juice*.

INTRODUCTION

Sugarcane juice (*Ikshu rasa*) is probably India's most popular and widely consumed juice. It has been in use for thousands of years, which is an interesting fact. Sugarcane juice and its derivatives, such as *Guda*, *Sharkara*, *Phanita* etc. are used in *Ayurveda* (jaggery).

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Routinely available and used sugarcane products are Sugar and Jaggery. Sugarcane juice has a low glycemic index, which helps to keep the body's metabolism healthy and maintain a healthy weight. Only around 1 tsp of raw sugar comprises only 11 calories.

Ikshu and *Ikshu Vikaras* are widely used since Vedic period (*Yajurveda* & *Atharva Veda*). *Ikshu* is also called as *Madhu Sharkara* (*Sharkara Vishesh*). Medicinal properties are *Madhura Rasa*, *Madhura Vipaka*, *Guru* (heavy for digestion), *Snigdha*, *Sheeta Veerya*, *Karmukata* of *Ikshu* is *Vata-Pitta Shamaka*. *Ikshu* and its derivatives are used in pharmaceutical preparations as single ingredient or as part of a compound formulation, and they are highly useful in day-to-day life. According to the quote "*Samskaro Hi Gunatardhanam Mucchyate*"^[1], the *Samskara* that will be given to *Ikshu Rasa* will change its properties. *Sharkara* has a different *Guna* than *Guda* or *Phanita*,

for example, each derivative will play an important role in determining the formulation's pharmacological action.

If Sugar cane juice is not used immediately after extraction, it becomes *Vidahetwata* (burning sensation). Night leftover sugar cane juice is *Amla Rasa Pradhana, Guru, Vatashamaka, Shoshi, Bhedani*,^[2] hence it should not be kept for a long period of time after extraction. The identification of the classical variety of *Ikshu Vikaras* (products) are very difficult. *Paundraka* variety sugarcane (near white colour) is superior to that of the *Vamshaka* kind.

Ikshu is also utilized as the main ingredient in many formulations, such as *Anupana Dravya, Bhavana Dravya*, and *Aoushadhi Dravya*, as well as assisting in the development of single or compound formulations and secondary formulations. *Ikshu Rasa* is *Pitta Rakta Vikaranashana, Sharkara Sama Veerya, Avidahi*, and *Kaphaprada* when eaten by chewing.^[3] It is also used as external application in *Pittaja Abhishyandi* diseases.^[4] Sugarcane is widely grown in India, the quality of sugarcane and its products are determined by the sugarcane variety. Pesticides are utilized in excess of the permissible limit in most places. Pesticides will have an effect on quality of *Ikshu* and also it *Vikarasa*.

AIMS AND OBJECTIVES

1. Review on *Ikshu* (Sugar cane).
2. Review on *Ikshu Rasa* (Sugar cane juice).
3. Review on *Ikshu Vikaras* (Secondary formulations).

METHODOLOGY

A comprehensive review has been made through, *Brahatravees, Dhanwantari Nighantu, Aadarsha, Priya, Kaiyyadeva, Bhavaprakasha Nighantu* and also *Sharangadhara Samhita, Rasatarangini*, views of their critics as well as contemporaries were also taken into consideration for this article. The journals, modern books and internet were also screened during the review.

Potassium, phosphorus, calcium, iron, and magnesium are abundant in sugarcane. Because it is an alkalizing chemical, it aids in the battle against cancer. It is especially good for rehydration because it not only cools but also energizes the body with high-quality carbs and protein. Sugarcane nutrients are useful to the kidneys, heart, and brain, as well as the functioning of other organs. The nutritional value of jaggery is enhanced when it is made from sugarcane juice using diverse methods. The micronutrients found in jaggery have a variety of nutritional and therapeutic properties, including anti-carcinogenic and antitoxic properties. When compared to white sugar, jaggery has proven to be superior. Sugar and sweets have long been popular around the world, but the rising trend in per capita sugar consumption is significant in light of the high prevalence of insulin resistance, abdominal adiposity, and hepatic steatosis, as well as the rising prevalence of chronic diseases like type 2 diabetic and cardiovascular disease. Jaggery is well-known for producing heat and providing immediate energy to the human body.^[5]

Sugarcane juice is thought to be one of the most effective natural treatments for liver-related ailments such as jaundice. Since sugarcane juice is alkaline in nature, it helps in maintaining the electrolyte balance in the body.^[6] Sugarcane juice is a wonder ingredient that assists in speeding wound healing. The presence of a rich amount of natural sucrose is potential in healing any kind of wound in a short span of time. In addition, you can also apply sugarcane juice over the wounded area to speed up the repair.^[7] Calcium, magnesium, phosphorus, iron, and potassium are all minerals found in sugarcane juice that play an important role in bone health. Drinking a glass of sugarcane juice every day will help keep your bones strong as you age, minimizing your chance of osteoporosis.^[8] Sugarcane juice aids kidney health by being a natural low-cholesterol, low-sodium diet with no saturated fats. When the roots, shoots, and worm-infested parts of the sugarcane are crushed together and the juice is consumed, it leads to burning sensation, indigestion, and constipation.^[9]

Table 1: Classification of Ikshu according to different Acharyas.

Charaka	Ikshuvarga, Kanthya, Trinapanchamoola
Susruta	Ikshu Varga
Vagbhata	Ikshu Varga, Trinapanchamoola
Adarsha Nighantu	Trinadi Panchamoola
Bhavaprakasha Nighantu	Ikshu Varga
Priya Nighantu	Drava Varga
Chakrapani	Ikshu Vikruti Varga
Dhanwantari Nighantu	Karaveeradi Varga
Kaiyyadeva Nighantu	Aoushadhi Varga

Table 2: Types of Ikshu according to Bhavaprakash Nighantu^[10]

Names	Guna Lakshanas
Poundrika	Madhura Rasa, Madhura Vipaka, Sheetala, Bruhmana, Balya, Vatapitta Shamaka.
Vamshaka	Atyanta Kathina and Kshara Yukta.
Shataporaka	Kinchit Ushna, Ksharayukta, And Vatanashaka.
Kantara	Guru, Veeyavardhaka, Kaphajanaka, Bruhmana, Sara.
Tapasekshu	Madhura Rasa, Shleshmakopaka, Truptikaraka, Veeryavardhaka, Balakaraka, Komala.
Kandekshu	Vataprakopaka.
Suchipatrak	Vatajanaka, Kaphapitta Nashaka, Kashaya Rasa, Vidahi.
Naipala	Vatajanaka, Kaphapitta Nashaka, Kashaya Rasa, Vidahi
Deerghapatra	Vatajanaka, Kaphapitta Nashaka, Kashaya Rasa, Vidahi

Neelapora	Vatajanaka, Kaphapitta Nashaka, Kashaya Rasa, Vidahi
Koshakrut /Koshakar	Guru, Sheetala, Rakta-Pitta-Kshayapaha.
Manogupta	Vatanashaka, Trushna Nivaraka, Susheetala, Atimadhura, Raktapittaprashaman.

Table 3: Ikshu classification based on age/ growth of Ikshu^[11]

Bala Ikshu	Vatakaraka, Medha-Pramehakaraka
Yuva / Taruna Ikshu	Vatanashaka, Swadishta, Pittanashaka, Kinchit Teeksha
Vrudha Ikshu	Raktapittahara, Kshatanashaka, Balaveeryakrut

Table 4: Classification based on Ikshu Angabheda^[10]

Moola (Root)	Athyanta Madhura
Madhyam Bhaga (Middle body)	Madhura
Agrabhaga and its Twak (both ends)	Lavana Rasa Pradhana

This type of Ikshu Rasa is Madhura Rasa, Pittashamak, Shukravardhaka and Sheeta Veerya in nature.^[12]

Table 5: Classification based on Ikshu colour^[13]

Black colour Ikshu	Vrushya, Tarpana, Dahahanti, Madhura and Kinchit Kshara Rasa Pradhana, Vrana and Shopakari.
White colour Ikshu	Vata-Pitta Shamana, Vrushya, Antarvidahe, Kaphakaraka

Pharmacological action of sugar cane juice^[14]

Sugars are digested and absorbed to provide your body with greatest source of energy. During digestion, complex sugars are broken down into mono-saccharides, the simplest sugars, include glucose, galactose and fructose. Digestion occurs in the mouth, stomach and intestine.

In the mouth and stomach - sugar digestion begins in your mouth. An enzyme called salivary amylase breaks down the sugar into smaller particles. Salivary amylase only affects a small amount of sugar due to the limited amount of time the sugar spends in mouth. Once in the stomach, salivary amylase becomes inactive due to stomach acid, or hydrochloric acid. The stomach acid continues to break apart the sugar molecules into smaller pieces.

Depending upon the pharmacological action such varieties of *Ikshu* are selected for the preparation of *Ikshu rasa*, *Sharakara*, *Guda*, *Phanita* etc.

Ikshu rasa Vikara^[15] are the substances which are prepared by *Ikshu Rasa*, are *Trushan*, *Daha*, *Murccha*, and *Rakta Vikara Neevaraka*. *Guru*, *Madhura Rasa*, *Balakaraka*, *Snigdha*, *Vatanashaka*, *Saraka*, *Veerya Vardhaka*, removes the *Moha*, *Sheetala*, *Brihmana*, *Vishanashaka*.

Ikshu Vikara Gunas individually^[15]

- *Phanita (Bahudrava)* - *Guru*, *Abhishyandhi*, *Brihmana*, *Kapha* and *Shukra Janana*, *Vatapittashramahanti*, *Mutrabasti Shodhana*.
- *Matsyandi (Kinchit Drava)* - *Malabhedaka*, *Balya*, *Laghu*, *Pitta-Anilapaha*, *Madhura*, *Brihmana*, *Vrushya*, *Raktadoshaapah*.
- *Guda (Loshtavat Druda)* - *Vrushya*, *Guru*, *Snigdha*, *Vatagna*, *Mutrashodhaka*, *Na Atipittaharo*, *Meda-Kapha-Krimi-Balaprada*.
- *Purana Guda (Old)* - *Laghu*, *Pathya*, *Abhishyandhi*, *Agnijanaka*, *Pushthikrit*, *Pittagna*, *Madhura*, *Vrushya*, *Vatagna*, *Raktaprasadana*.
- *Naveena Guda (New)* - *Kapha*, *Kasa*, *Swasa*, *Krimi Karaka*, *Agnikrut*.
- *Khanda* - *Madhura Vrushya*, *Chakshushya*, *Brihmana*, *Sheeta*, *Vatapittahara*, *Snigdha*, *Balya*
- *Sharkara (Shweta Sita)* - *Su Madhura*, *Rucchya*, *Vatapitta Daha Nivaraka*, *Murccha*, *Chardhi*, *Jwara Hanti*, *Susheeta*, *Shukrakaraka*
- *Madhukhanda (Sharkara prepared from Madhu)* - *Ruksha*, *Kaphapittahara*, *Guru*, *Chardhi*, *Atisara*, *Trushna*, *Daha*, *Raktavikara Nivaraka*.

Detailed explanation of *Ikshu Vikaras*

Ikshu Rasa

It is commonly available in Maharashtra, South India, Gujarat, and other states, a few synonyms of *Ikshu-Ikshu*, *Rasala*, *Gandeeri*, *Ekha*, *Ukha*, *Ganna*, *Poundra* and *Madhusharkara (Sharkara Vishesha)* is another name for *Ikshu*. *Ikshu* is *Madhura Rasa*, *Madhura Vipaka*, *Sheeta Veerya*, *Snigdha*, *Guru* (heavy for digestion), *Brihmana*, *Sara*, *Mutrala*^[16] *Shukravardhaka*^[17] and *Vata-Pittagna*, but *Kaphavardhaka*. But, eating *Ikshu* immediately after eating produces *Vataprakopaka*.^[18]

Sugarcane juice's properties are influenced by a variety of factors, including sugar cane chewing (*Danta Nishpidita*), machine extraction (*Yantra Nishpidita*), time duration following extraction, heat application to juice, fermented juice, etc. Even the use of *Ikshu Vikara* in *Madhya Varga* preparation is significant. *Madhya's* property changes as per addition. The sugarcane plant (*Saccharum officinarum*) produces sugarcane juice, which has a sweet flavour due to its high sugar content. It's served over ice as a refreshing drink with a hint of lemon or sizzled with mint, ginger, and salt. Sugarcane juice is used to make a variety of additional by-products such as jaggery, molasses, rum, biofuel, and ethanol.^[19]

Sugarcane juice is ideal for those who suffer from a burning sensation when urinating, who are tired due to excess sun exposure during summer. Sugarcane juice contains sucrose, glucose, and fructose. Non-sugar constituents present in the cane juice are carbohydrates other than sugars. Asparagine and glutamine are prominent amino acids in the juice. Vitamins present in juice are - thiamine, riboflavin, niacin, pantothenic acid, biotin, and vitamin D. Enzymes include- diastase, invertase, lactase, peroxidase, tyrosinase. It contains sugar, water, mucilage, resin, fat, albumin, guanine. Sugarcane juice is relished as a refreshing drink as it is nutritious and rich in vitamins, carbohydrates, and amino acids. The status of sugarcane juice as a nutritional beverage is well established owing to the presence of variable contents of hydrophilic components. In addition, the

chemical profile of the sugarcane juice indicates the presence of the several phytochemicals pertaining vast pharmacological research potential.^[20]

Special indications of Ikshu Rasa and its Vikaras

- *Ikshu is Mutra Janan.*
- In *Udara Roga Nashak Yavagu Ikshurasa Paana*^[21] is indicated.
- In *Cchardhi: Jala Va Ikshu Paanam Chikitsa*.^[22]
- In *Raktapitta*^[23]
- *Granamardha Raktasruta Nasya* is indicated along with *Draksha Rasa* and *Ikshu Rasa*.^[24]
- *Grahanyam: Draksha, Ikshu, Kharjura Rasa Paana*.^[25]
- *Ikshumoola Prayoga*^[26] (*Brahmani Gutika*) in *Vajeekarana*.
- In *Nagaradi Yoga*^[27]: *Shunti, Krishna Jeeraka, Guda* etc. explained in *Vataja Gulma, Uudavarta, Yonishoola*.
- *Pittaja Gulma*^[28]- *Amalakyadi Grita* prepared from ghee, *Amalaki Swarsa, Ikshu Rasa* etc.
- *Pittaja Abhishyadi*^[29] - *Ikshurasa* is used as *Nasya, Pratimarshya, Avapeedana, Sechana* etc.
- *Rakta Abhishyadi- Patalyadi Anjana*^[30] has to do *Mardhana* with *Ikshu Rasa*.
- In *Mutaghata*^[31]- *Ikshu Rasa* along with other *Dravyas*.
- In *Jalaoukacharana* therapy along with *Madhu, Guda* and *Haridra Lepa*.
- In *Mulaka Taila*^[33] preparation *Ikshu Rasa* is added along with *Tila Taila* and other ingredients.

Phanita

Phanita Guna : *Guru Abhishyandhi, Brihmana, Kapha Sukrakala, Vata Pitta Shramahara, Mutra Basti Vishodhana*^[34] and also *Raktadosha Nashaka* it is also called as *Raab*.

Guda

Guda is Vrushya, Guru, Snigdha, Vatagna, Mutra Shodhana. Few synonyms of jaggery are *Madhura, Rasapakaja, Syadikshasara* and *Guna Karma* is, *Madhura, Ksharayukta, Guru, Usna Veerya, Kapha Vata Shamak*, after becoming old (*Purana Guda*) it turns out with *Rasayana Guna*. *Guda is Pitta Nashaka, Madhura, Vatanashaka*, and *Mutra Shodhaka*, in that *Purana Guda* is very useful and its removes *Gulma, Arshas, Arochaka*. *Guda* along with suitable *Padartha* having *Guda* is helpful in *Kshaya, Kasa, Kshatakshina, Pandu Roga*, in *Rakta Kshaya* it is called as *Pathyatama*.

There are two varieties of jaggery (*Guda*) - *Dhauta Guda* (washed/semi-refined) and *Aadhauta* (unrefined/unwashed). Unrefined or unwashed jaggery is alkaline, *Natisheeta, Snigdha, Mutra Shodhaka, Raktashodhak, Krumikara, Balya*. Whereas *Dhauta Guda* is *Madhura, Vatapittaghna, Asruk Prasadana*, it has a more *Pitta* balancing action compared to *Adhauta Guda*.

- *Purana Guda - Madhura, Vata-Pittagna, Vrushya*, light for digestion.
- *Naveena Guda*^[35]- *Kapha, Kasa, Swasa, Krimikaraka*.

Importance/ Visheshata of Guda

In *Guda Roga, Kamala, Shosha, Prameha, Gulma, Pandu* and *Haleemaka*, in *Vata, Raktapitta*, in *Rajaroga*, it also enhances the *Ruchya* and also removes the *Roga*.

Guda is prepared by boiling the juice down to a thick consistency "molasses" or "treacle", the non-crystallizable portion. If it is not prepared properly, it causes intestinal worms, increases the chances of *Kapha* disorders. *Purana Guda* (old jaggery) is *Swadutara, Laghu, Agni Deepana, Ruchya*, good for heart, *Pittaghna, Tridosha Ghana, Shramahara, Panduhara, Pramehantaka*. So jaggery should be at least one year old for its usage. Freshly prepared jaggery increases *Kapha* and causes indigestion.^[36]

It is helpful in *Kasa* and *Shosha*, and along with *Yukta Yogas* it is very useful. *Guda* is also explained under splenomegaly (*Plihodara*) along with *Haritaki*.

It is also useful in *Prakupita Vata, Swasa, Murccha, Marmagaman Janyashranti, Shrama, Mada, Visha, Mutra Krich, Ashmari, Vishama Jwara, Raktapitta Jwara Prakopa, Trushna, Daha, Jeerna Janya Kshaama, Rudhira Kshaya* Even all type of *Roga Nivaraka*.

It is a good substitute for sugar. Not only that, but it also comes with a bunch of unique health benefits. Jaggery forms the backbone of *Asava* and *Arishtas* - fermented liquids of *Ayurvedic* medicine.

Different formulations of *Guda* and its *Gunas*^[37]

1. *Guda Khanda Guna: Vata-Pitta Shamaka, Sheeta, Snigdha, Balya, Mukhapriya (Swadishta), Chakshushya, Kaphakaraka, Vrushya*, it is very helpful for eyes, it stops excessive vomiting.
2. *Sharkara Guna: Sheetala, Kasa Shola Pradamani, Murccha Brama Madaapah*. It is also called as *Shweta Sharkara* or *Sheeta*.
3. *Matsyandhi Guna: Bhedani, Balya, Laghu, Pitta-Anilahara Madhura Brihmana, Vrushya*.^[38]
4. *Khanda Guna: Madhura Vrushya Chakshushya, Brihmana, Vatapittahara, Snigdha, Balya*.
5. *Sharkara Guna: Su Madhura, Ruchya and Sharkara Gunas are Murccha, Chardi Jwarahara, Su Sheeta, Shukrakarini*.
6. *Madhusarkara (Sharkaravishesha): Madhubhava Sharkara Paryaya Naama, Madhu Sharkara, Maadhava Sharkara, Makshika Sharkara, and Madanodbhava Sharkara*, as well as their *Guna Karma* are *Madhu Sharkara, Vamana, and Atisara Nashaka*.
7. *Yavaasa Sharkara (Sharkaravishesha)*: it will come from the *Yavasaa* plant. It's also called as *Yaasa Sharkara* its *Guna Karma* is, *Madhura, Kashaya Rasa, Madhura Veepaka, Sheeta Veerya, Ruksha, Jwara and Raktavikara Nashaka*.
8. *Guda Khanda Guna: Vata Pitta Shamaka, Sheeta, Snigdha, Balya, Mukhapriya (Swadishta), Chakshushya, Kaphakaraka, Vrushya, Vrushya, Shukra Vardhak*.

DISCUSSION

In body and body stability (*Ikshu Rasa*), *Madhura Rasa* fulfils a special role. *Madhura Rasa* is prominent in *Ikshu*, as opposed to *Draksha, Kharjura*, and other *Madhura Dravyas*. Not only is *Ikshu* commonly employed in our classics in various forms, but so are its *Vikaaras* such as *Guda, Phanita, Sidhu, Sharakara*, and so on. The method of extracting sugarcane juice is also very essential here like *Dantapedita, Yantra Nishpedita*.

It is advised to have fresh extracted sugar cane juice, because sugarcane juice should not be kept for a long time since it causes *Vidahi* (burning sensation). Even though sugar and jaggery are prepared from the same base (sugarcane) the property changes. *Guda* is *Usna Gunayukta* whereas *Sharakara* is *Sheeta Gunayukta*.^[39] These *Ikshu Vikaras* can also be deployed in everyday life depending on *Rutu, Kaala, Prakrita*, and so on.

Sugar and jaggery are used as a sweetening agent, as well as a preservative and fermenting agent (*Draksharishta*) in *Asava-Arishta, Avaleha Kalpana, Sharkara Kalpana, Guda Kalpana (Kalyanaka Guda), Panaka Kalpana*, and in syrups jaggery is used as the base (*Raktansoo* syrup). *Guda* is also used in *Vati Kalpana*, which is a base for many tablets and also a good binding agent; it also adds immense medicinal value to the tablet (*Vyoshadi Vatakam*) in some *Kashayas (Pathyaksha Dhatryadi Kashayam)*; and it is also useful in *Guda Varti* preparation as a base ingredient, among other secondary *Ikshu* preparations. Black coloured jaggery is mainly used in wine preparations.

Ikshu and its *Vikaaras* are specially indicated in *Mutra Kriccha, Raka Janana, Shoolahara, Gulma Roga, Udavarta, Yonishoola, Udara Roga, Chardi* and also having *Mutrala* property. *Ikshu Rasa* is also used as a media in the preparation of *Patalyadi Anjana* indicated in *Raktadi Abhishyadi* and also it is found in the preparation of *Krishnakara Lepa* it is also used in the treatment of *Pittaja Abhishyandi* in the form of *Pratimarsha Nasya, Avapeedana, Sechana*, and so on; *Sushruta* used jaggery in '*Dahakarma*', as well as *Guda, Madhu, and Haridra Lepa* therapy.

Nowadays, *Kshara* and lime water are added to the plants for increased yield and marketing purposes, however, this has an impact on the quality and quantity of the plants later on. Such a *Ksharayukta Ikshu Rasa* causes *Shweta Varna Sharkara*, which is harmful to one's health, and the *Guda (Ksharayukta)* causes *Krimi*, infertility (*Pumsatvanashana*), and is also harmful to one's heart.

Sugarcane juice is particularly beneficial for persons who suffer from digestive disorders, among other conditions. Sugarcane juice's potassium balances the pH levels in the stomach, assists in the secretion of digestive juices, and keeps the system running smoothly.^[40] It also helps to prevent stomach infections. Sugarcane juice can help reduce body inflammation caused by sexually transmitted diseases, urinary tract infections, kidney stones, and prostatitis when eaten in a diluted form with lime juice and coconut water.^[40]

Sugarcane juice can be applied topically to help decrease and heal skin problems like acne. Sugarcane juice boosts cell turnover by possessing alpha-hydroxy acids (AHAs) like glycolic acid. They also exfoliate the skin, reducing the chances of acne formation. Simply make a mask-like consistency with the juice and Fuller's earth (Multani Mitti), apply to the face and neck, and leave on for 20 minutes. Finally, rinse with cool water.

Sugarcane juice has a low glycemic index, which keeps the body's metabolism healthy and helps maintain a healthy body weight.^[41] Sugarcane juice is ideal for those who are tired due to excess sun exposure, during summer, those who often suffer from burning sensation all over the body.^[42] *Guda* is a type of unrefined sugar prepared from sugarcane juice. *Guda* is *Natishleshmakara*, *Srushta Mutrashakrut*, if it is not prepared properly, it causes intestinal worms. Before its formation as *Guda* the sugar cane juice undergoes four stages, viz. *Ardhavasheshita* (1/2 juice remains in the process of boiling), *Tribhaga Avasheshita* (1/3rd remains), *Chaturbhag Avasheshita* (1/4th remains) and *Kshudra Guda* or *Phanita*. The juice undergoing transformation through all these four stages is

progressively heaviest. That is to say, the *Phanita* is the heaviest.^[43]

Guda is healthier than sugar because unlike sugar, jaggery is made with natural processes without chemicals. (of course, some low quality jaggeries are sold in the market which are processed with chemicals).

CONCLUSION

In place of cool drinks, Sugarcane juice can be used, because it is best natural coolant. The Pharmacological action of *Ikshu Vikaaras* varies depending on the *Samskara* adopted. Sugarcane juice has a low glycemic index, which helps to keep the body's metabolism healthy and maintain a healthy weight. It is especially good for rehydration because it not only cools but also energizes the body with high-quality carbs and protein. Sugarcane juice is used for internal administration, external application and also fits for different pharmacological preparation.

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