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The Sweet Path: Buddhism's Role in Taking Sugar to China

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Abstract

The critical channel through which sugarcane cultivation and sugar-refining knowledge was carried to china was by Buddhist networks. It suggests a resurgence of archaeological and agronomic evidence to overcome previous arguments of an indigenous Chinese source, it is in fact a synthesis of textual, archaeological, and agronomic sources in tracking the movement of sugar along monastic, mercantile, and diplomatic routes. Pali and the Sanskrit, sources witness to the ritual and medicinal status of sugar in the lifetime of the Buddha and the rules of the Venna and the monastic travel literature and the Chinese chronicles of the spreading of the plant by the sixth century CE. Cane cuttings, as well as refining techniques, were spread by Buddhist estates and pilgrim-monks and integrated sugar within temple economies and the popular diet. The paper therefore re-categorizes Buddhism as a technological vehicle, predicting religious mobility as a driver of agrarian and culinary transformation in Eurasia. The article explores the Buddhist medical law and literature to determine the pharmacological and agronomic importance of sugarcane in India and China. Sugar, syrup and cane juice are also included in the list of five allowable medicines in Vinaya sources, but are not classified as food, justifying their therapeutic use at all times. One episode in the Vinaya and subsequent Chinese translation, a red-rot, dates to North India around the Common Era, and confirms the South-Asian origin of S. officinarum. The work, based on the analysis of these disciplinary texts and late hagiography of Mahaprajapati and early Chinese agronomic texts, has claimed that the networks belonging to monasteries disseminated the cane cultivars and fine knowledge to the east, which developed Chinese pharmacopoeia.

Keywords

Phanita, Pundravardhana, S. officinarum, Vinaya Pitaka, Xuanzang

Introduction

Sugarcane is an important plant in all civilized countries because it is one of the essentials of life. On the ground of evidences, most attentively gathered by the most learned persons of ancient and modern times, some maintained China, the first country to grow and produce sugar, where the science of growing sugarcane was exercised, since the very beginning of the world. They did not only have the art of extracting the juice but the whole process including refining sugar (Hyde 5-6). It is relatively known that the Chinese had grown sugarcane and had been using it two millennia before it was introduced and utilized in Europe (Hyde 5-6). In this way was China supposed to be the native of sugarcane (Smith, 172). The Chinese claimed that sugar had existed in China over three thousand years produced using the cane (Ohio State Board of Agriculture 206). The fact as to the origin of the cane sugar was also well disclosed with the

coming of the renowned traveller Marco Polo, mid-way into the thirteenth century. The plant was soon transferred to Arabia, Nubia, Egypt and Ethiopia where it was to be cultivated in large quantities. The first sugarcane was introduced in Europe in the beginning of the fifteenth century. Sicily had been the first in its cultivation, and so it was transmitted to Spain, Madeira; then, soon after the discovery of the New World by Columbus, it was brought to Haiti and Brazil, whence it extended slowly through the islands of the West Indies (Society for the Diffusion of Useful Knowledge 25).

Others have recounted the discovery of sugarcane in Brazil prior to the incursion of the Spaniards and the Portuguese who could have planted it there. Father Hennepin, the first European to visit the lower parts of the Mississippi, even there could he see sugarcane. Sugarcane is mentioned in Russian records in between 200 and 600 AD. Sugarcane was thought to have been introduced to Spain and Egypt approximately in the eighth century (Queensland Sugar). Rumphius the Indian Pliny says, that the art of extracting the juice of the cane, to procure of it sugar, is not very ancient among the Indians; that they either were taught it by the Chinese, or the covetousness of making money led them to its invention. The Chinese are the only individuals who refine sugar in Java, even up to date (Porter 12). The champions of the theory of the Chinese origin of sugar scarcely doubt that the Chinese knew the various arts, which were necessary to the cultivation of the plant, and that the Chinese had known since the most distant antiquity how to make sugar to domestic uses.

Kitchen God

Throughout China, Taiwan and Southeast Asia, most kitchen walls of Chinese households have a picture of Tsao Chuan, the Kitchen God. He is suspended above the stove and he oversees the home of a family. During the Chinese New Year, Tsao Chuen will be taken to heaven to give a report to Jade Emperor on whether the family members behaved well or badly. The Chinese tradition dictates that the Kitchen God arrives to inspect the house of a person a week before the Chinese New year festival. Neem Gao, a Chinese steamed fruit cake is served to bring about positive attitude towards the home (Wong and Yarbrough 190). The Chinese New Year cultures also involve smearing his mouth with sugar or honey in order to allow him to give a sweetened form of their actions.

There were scholars who were spell-bound by the fact that China was the first to make candies. Learned since the distant antiquity, their confections were exported in mass to India. Nevertheless, the origin and the manufacturing method of them was a closely guarded secret during thousands of years (Beck 38). By the 1 st millennium BC, they started to export silk cloth to foreign regions and the caravans were frequently transporting silk to India (New Encyclopaedia Britannica 810). It is noted that the Chinese liked keeping a secret as to the source and the process of acquiring all articles, which they held (Copley 137). An example may be drawn in the origin and process of production of silk, which has been so zealously a secret long centuries long. The porcelain story however does not create such an impression.

The porcelain story

The market value of porcelain which is secure and precious china was once more prestigious than that of gold and was often referred to as white gold. China exported the high quality porcelain in huge quantities to Europe. The Europeans were shocked to observe the flashy and shiny and yet frail dishes in 17 th century to serve food and beverage, particularly the round hollow flask teaware, specially done in Europe. Nevertheless, unlike the spices which were sold via the Arabs, porcelain vessels came right to their doorsteps with the highly coveted tea imported somewhere else in the form of ballast (Nair 112). The European market had a high demand of the porcelain utensils. This brought a passion in the west to acquire the recipe of the porcelain. Of the connected espionage, one of the best was the one which the French Jesuit missionary Pere d'Entrecolles made of the Chinese porcelain factories. The letters which he had written between 1712 and 1724 and which were later to be referred to as Lettres édifiantes et curieuses contained information in detail regarding the manufacture of porcelain. It was told that the Jesuit convert secured the formula of the secret, by cozening the Chinese converts, (some anticlericals claim in exchange of indulgence) and smuggling the secret out of China into Paris. This made the French open their renowned porcelain factory at Sevres (Meyer 21). The report proved wrong because ignorance of the Chinese language and the industrial espionage became a mission of a fool.

Where pirating had been unsuccessful, Science assisted the Europeans to devise an invincible way. However, the investigation was sure to be conducted in captivation. A chemist and a self-proclaimed alchemist, Johann Friedrich Bottger (1682-1719), had developed porcelain that was as good or even better than china ware produced in China, in collaboration with the scientist Ehenfried Walter von Tschirnhausen (1651-1705). of Poland, who was bent upon discovering the secret of true porcelain, virtually imprisoned them. In fact, they by chance found the secret of china making. This ended the centuries-old Chinese monopoly of production making of porcelain which was a common sense. China took its exportation of tea seriously. The teapots which were shipped on as ballast of the vessel were presented only as a testimonial. The fact that the earthenware production was a household industry rendered the products economical and the activities of the Europeans to create pottery could not compete with the Chinese products in both price and style. Why they should have created such hue and cry about the porcelain, however, is inexplicable. However, the spice trade scheme provides us with another image.

Europe's need: a peep into the secret of the Arab monopoly over spice trade

Piper nigrum, the oldest and the most famous spice in the world economy is the native home of Malabar. The pepper vine grows well in the wet, hot climates having even distribution of the annual rain. The Arabs, the only actual supply of spices in the ancient Near East, regulated the supply of pepper before its enormous demands and in its trade long flourished in their favour. Up to half a millennium after Vasco Da Gama, this was the secret of the spice trade, which was to lead to wars, fortunes, and loves being won and lost. The Arabs, who had provided the need of Europe with her occasion, rendered themselves the most important of the mediators. The eagerness of the Arabs to have the control of the trade in their hands, made them conceal the sources of the spices. They came up with certain cover stories to mislead the consumers.

A story, one which circulated in the 5th century BC, deceived Herodotus of Halicarnassus (b. 484 BC) into believing that cinnamon grew on a mountain range somewhere in Arabia and that there lived there giant birds of prey which nestled of huge sticks of cinnamon. Herodotus informs us that the Arabs were feigning ignorance as to the place of neither the wood, nor the nation in which it was produced. Only few, as by chance, are connected with that country in which Dionysus was raised. They say that great birds bring the sticks, which we Greeks, after the name of the Phoenicians, call cinnamon, and bear them up in the air, to build their nest. These are fixed to a bare surface of rock, where a foot of man cannot cling to. To obtain the cinnamon therefore the Arabians practice the following contrivance. They cut all the oxen and asses and beasts of burden, which die in their land, into big pieces and which they take with them to those parts, and there lay them next the nests. The old birds then fly down and grab the bits of meat and carry them away to their nests; which they are unable to sustain and break off, dumping them to the ground. Then the Arabians take back the cinnamon and it is later brought out of Arabia to other countries (Monroe 10). According to Herodotus: Arabia is the sole nation that cultivates frankincense, myrrh, cassia, cinnamon and laudanum (harvested with great danger by the adventurous Arabs). Those trees on which the frankincense grows are surrounded by winged serpents... (Corcoran, Ryan, and Prendergast 161).

As early as 3000BC, the Chinese were familiar with cassia, a type of cinnamon. As she gathers them, Herodotus says that the Arabians were forced to guard them against the bird-like, nocturnal creatures that screech around the shallow lake upon which spice grows. Thus, they would wrap up all around their body, and also on their face, their oxen and other skins. Nevertheless, Herodotus idealised Arabia because of its spices: the entire country smells of them, and radiates a fragrance numico miraculum (Miller and Miller 16).

That started to crumble the Arab grip when, in the 1st century AD, the Roman historian Pliny, revealed these tales as myths and fables. The need to regulate the sources of the spices inspired the Romans to invade Arabia in 24 BC in vain. The intelligence that was prevailing in the market supported the Arabs to act as middlemen. but the happy chance of finding out, by one of the Roman seamen, of the first century of the Christian era, called Hippalus, the seasonal winds, which blow constantly six months east to west, and six months the reverse, was conclusive. The trips made between the coast of Red Sea and India and vice versa were also helped by the annual visitation of the monsoons that came to nourish pepper vines. This secret once and forever disrupted the Arab monopoly. The secret of cane sugar, it is said, among many others of the discoveries of man, was a closely guarded secret as the finished product was exported at such a good profit that only those able to afford it were capable of buying it (Harding 198). This cannot be said so where India is concerned but can be explored to determine how China acquired the knowledge of sugar. Dioscorides referred to India as the origin of granulated sugar, and that this method was transmitted to China via Indian Buddhist monks sometime during 6 th century AD. Sugar was a Buddhist: a monk offered

the refining technique to Szechwan and the appeal of Buddhism doctrine was likened to that of sugar canes. However, Sugar never enjoyed the dominant position in the Chinese economy just as it did in the European (Adshead 91). Chinese tea does not contain milk and sugar. The country had been slightly hesitant to either grow or produce sugar during the initial stages in China. That is why they were not competing in the sugarcane industry, with other countries. The spice trade introduced tea in Europe but it was not a significant beverage at first.

Theories that China was the land of sugarcane, that started disintegrating with the introduction of the study of the growth and spread of Hinduism/Buddhism, are coincidental with the birth of modern hermeneutics. This showed that sugarcane entered China via Buddhism and not the other way round. It is high time to trace the stages through which the priceless sugarcane plant found its way to various areas of the world, since ancient times.

The Buddhism was linked with sugar.

This can be determined by the fact that the sugarcane was grown in India at the time of Buddha based on the Puranic and Buddhist literature. Vedas provide such plants/ trees as (i) Silk cotton (Salmalia malabaricum); (ii) Khadira (Acacia catechu);

The following are used: (iii) Simsupa (Dalbergia sissoo); (iv) Vibhitaka (Terminalia bellerica); (v) Sami (Prosopis sp.); and (vi) Plaksa (Ficus infectoria). Iksu (sugarcane - Saccharum officinarum) is a plant which we encounter growing in the Atharvaveda, Maiyani Samhita and other writings.

It is mentioned that phanita was produced in patimokkha, and thus ancient India becomes the definitely the earliest cultural region to produce sugar products (Needham and Daniels 367). Other than that, Gautama Buddha was the only world religious leader to give a special mention on sugar. The names of the trees/plants upon which the seven Buddhas achieved enlightenment are the following (Rhys Davids 6).

The Buddha Name	**The trees/plants**
Vipassi	Patali
Sikhi	Pundarika (lotus)
Vessabhu	Sala
Kakusandha	Sirisa
Konagamana	Udumbara
Kassapa	Nyagrodha
Gotama	Asvattha

It can be discerned that Buddha's sayings, written down some time after his death, might have invited some interpolations. However, his familiarities with at least some form of sugarcane remain unquestioned, reinforcing the probability that sugarcane was grown in India during his lifetime.

Sugarcane: a correct food/medicine of Buddhism.

The injunctions coupled with the idea that the Buddha was born of sugarcane contributed to the cultivation of awareness of sugarcane, syrup and sugar, and their use with the dissemination of the Buddhism religion in China. Besides Buddhism, the Tokharians of Central Asia were the ones who brought milk into China (Kuppuram and Kumudamani 298). The Buddhist doctrine was closely linked with sugarcane and sugar, and the Buddhist monks were capable of spreading the sugar-making technology over a much greater area of the Chinese society, via their estates, monasteries, and their relations with the aristocracy.

Buddha permitted monks to carry food stuffs in such occasions. Need husked rice, take husked rice; need dwarf beans, take dwarf beans; need salt, take salt; need sugar, take sugar; need oil, take oil; need ghee, take ghee (Wijayaratna 67). Even during the afternoon, monks and nuns could drink. The list of drinks that are acceptable and the details stated in the Mahavagga (Vin I 246) contain the juice prepared out of the leaves, flowers as well as fruit of plants, but not juices prepared out of vegetable, wheat, liquorice and

sugarcane (Wijayaratna 74).

The Vinaya Pitaka explains the meaning of food and medicine and how they can be used. The five medicines are ghee, butter, oil, honey, and raw sugar, and they should not be stored more than seven days and may be used at any time and seven days. The seven day medicines can also be utilized as food, although one cannot utilize them as medicine after using them as food. A monk who has taken them can set aside some of them as medicine, and take the rest as food. Salt or ginger which is stored as a lifetime medicine can not be mixed with food. Ginger sweetened may serve as seven day drug, but not life long drug (Pesala).

The road to the desert being low of water and sustenance is hardly to be ridden without food. Training regulations of a monk or nun are referred to as patimokkha. Visuddhimagga identifies its meaning (pa-timokkha), which is the virtue of the training precepts; in that it sets him free (mocayati) who defends it (paiti) and preserves it, in that it sets him free (mocayati) of the pains of the states of loss, etc.; that is why it is called patimokkha. The commentaries are found in the patimokkha which is most easily studied in the Vinaya. The pa(a)timokha (pratimoksha) is the fundamental code of monastic discipline, which is set forth in the Suttavibhanga. There are 227 monastic rules (bhikkhus) and 311 nuns ones (bhikkhunis). The pali version of the Vinaya texts has been translated by Horner. Thomas in his turn defended Oldenburgh by evidence that the patimokkha was not only codified during the lifetime of Sakyamuni himself (c. 500) or of his own personal disciples. Pati means binding in Pali, and mokkha means an end. Its Sanskrit counterpart, pratimoksha, means a collection of teachings that are referred to as the Buddhist code of living. It considers pakittiya or self-indulgence, which involves taking of delicacies like ghee, butter, oil, honey, flesh, milk, curds or gur (a type of sugar) when one is not ill. It enabled the ill monks to use phanita (syrup) among the five medicines. This is one of the rules that Buddha established, revealing his knowledge of sugar.

In Lankavatara Sutta, rice, barley, wheat, moonga, urad, masura, ghee, oil, milk, raw sugar, guda, sugar, coarse sugar, etc. are recommended to be the most appropriate food that a Buddhist should eat. In the Surangama Sutta, Shakyamuni Buddha says that, Mahamati, the Boddhisattva, who by nature is compassionate, is never to eat any meat. The food of which I have allowed my disciples, Mahamati, is pleasing to all men of wisdom, but to foolish men it is offensive; and is productive of numerous merits, it is a deterrent of numerous evils; and it is the food prescribed by the antique Rishis. It includes rice, barley, wheat, kidney- beans, beans, lentils, etc., clarified butter, oil, honey, molasses, treacle, sugarcane, coarse sugar, etc.; food prepared with these is proper food" (Walters and Portmess 69).

The Buddha recommended in the Kutadanta Sutta and the Payasi Sutta both of the Digga Nikaya and the Samyutta Nikaya III.I.91.6 the continued use of vegetal materials, ghee, oil, butter and sugar in yajnas (Pali yanna), since these yielded great merit and benefit; but not slaughter of animal, pasu bali. In the Mahaparinibbana Sutta he was encouraging the Vajjis to worship their caityas as was normal (Krishnan 76).

There are five orders or processes (laws) that govern the physical and mental realms and they are Kamma Niyama, Utu Niyama, Bija Niyama, Citta Niyama and Dhamma Niyama. Among these, Bija Niyama or of germs/ seeds (physical organic order) speaks of rice that is made out of rice-seed, sweet taste out of sugarcane or honey and unusual properties of some fruits. This order has been attributed to the scientific theory that the cells and genes exist, and the closeness related to twins.

The Buddha permitted sick monks to drink at any time of the day or night the five medicines which included ghee, navaniitam, oil, honey, and sugar (sugarcane and syrup). These five have been agreed upon by the Mahaavagga as medicines and as nutriment to people. And yet they were not regarded as solid food. The Buddhist monks were also allowed to consume kanche chih (sugarcane juice), hei shih-mi chiang (black syrup, phanita) and consume the juan-hei shih-mi (soft black sugar) and other sugar products in the Dharmagupta Vinaya of +405. The Vinaya determines food and medicine and how they can be used. Indian, Chinese, Arabic and European pharmacology has been used in widespread usage, but the use of medicine was an extension of sugarcane itself (Needham, 68).

Red-rot disease is a highly fatal illness that was initially discovered in the late 1960s and early 1970s, when the causative organism, called Pseudomonas obimutans, was identified (1959). Red-rot disease is a very deadly disease that was first identified in the late 1960s and early 1970s when the causative organism, which is known as Pseudomonas obimutans was discovered (1959).

The mention of sugarcane is to be subsequently met with in the Vinaya Pitaka, and the occurrence of red-rot disease (Martin, Abbott, and Hughes) in the north Indian region near Christ. The story was first translated into Pali Buddhist literature by Noel Deerr, and has been found only once since then. Pre-historic and historic details regarding sugarcane are provided by Deerr (1921) and Earle (1919, 1926). The reference in the Chinese of the tripitaka of sugarcane disease, appears also in the Chinese version of the Mulasarvastivada text, the Vinayaka sudrakavastu, prepared by the monk and great traveller, I Ching. In the article, Daniels and Daniels (1976) state that the passage of the Chinese translation of an Indian Buddhist text, the Vinaya Pitaka, confirms the previous statement by Deerr. They end by concluding that it was S. officinarum, which was vulnerable to the disease, that would have prevented north India becoming a centre of diversity of this species and rendered it a rarity by the time of European contact, which in its turn would suggest that the original homeland of S. officinarum was northern India (Babu 31).

The fact that women were admitted to holy orders, a problem in itself, which was discussed at the very time of the Buddha, served as a source to mention the sugarcane disease. The foster-mother of the son of Buddha, Mahaprajapati, asked the Buddha to permit women to establish an order of nuns. Coming across the Buddha on an opposing mind, she convinced him using Ananda, the favourite disciple of the Buddha. Ananda tells Prajapati to wait outside, and goes in search of Buddha, on behalf of Mahaprajapati. When Ananda receives the same response to an identical request, he inquires in yet another way, Lord, can women, When Once-Return or Non- Return or Arhantship they have reached Stream Entry, after Going Forth, from the house life into the homelessness of the Law and Discipline proclaimed by the Perfect One? (Ñānantoli 105). To this, the Buddha recognized that they can be arhants. Muted down to the seeking of pardon, Buddha said: And just, Ananda, as when the disease called mildew, falls upon a field of rice in good condition, that field of rice will not last long; just as under whatever doctrine and overall training the women are permitted to pass forth out of household life into the homeless condition, so will that religion not continue long. And further, as, when the affliction blight can upon a field of sugar-cane in perfect life, so is that field of sugarcane not sustained long; and so likewise, Ananda, under whatsoever doctrine and discipline women may be permitted to pass out of the house life into the life of the homeless. And just, Ananda, as a man would preemptively construct an embankment to a vast reservoir, beyond which the water must not surpass; just even so, Ananda, have I preemptively laid down these eight chief rules to the nuns (bhikkhunis), their lifelong not to be surpassed (Ballou, Spiegelberg, and Friess 236). The Buddha accepted to ordain women with the condition that they embrace the so-called eight chief rules (garudhammas) (Findly 106), that were contained in Cullavagga of the Pali canon. In brief, the introduction of women would be like mildew to the rice field and blight to the sugarcane field. Nevertheless, the eight rules would act as a dam to avert spillage and wastage (Copleston 133).

Upon reaction to the response of Prajapati, the Buddha, in his turn, states the prophecy that this compromise will cause Dharma to live not 1000 years, but 500. Including a few rather far-fetched parallels of robbers breaking into houses, mildew into rice, rust into sugarcane, he concludes by saying that it is like building a dam prophylactically before water can burst out of the dam. This discussion is based not merely to its information on the diseases of plants but also the opinions of the Buddha. There are those who see in it the Buddha foreshadowing, which is an ominous sense of the destiny of Buddhism (Chappell 133). When a field of ripened sugarcane is infected by the disease, the field does not have long life span. Upon this destructive character of the disease, the Buddha made a comparison. He said: Wherever the discipline of Dhamma that women may be permitted to part ways with the home to the homeless life that godly life will not be long.

When the Buddha was questioned whether women should be permitted to join an order of nuns, he compared women in religion to the fungal diseases of cane blight literally. On a sugarcane field when falling, this red-rust (btsah-nad) condemns a sugarcane field. The Chinese translation of I- Ching contributes to the diagnosis. It ends in it, The story goes on: Once more, Ananda, it is a field of ripe sugarcane that has been devastated entirely by red internode disease (chhih-chich-ping). Since the bright-coloured red rot (node plus internode) is the key characteristic of the disease, it is definite that the disease which I-Ching described was red rot Glomerella tucumanensis (Speg.) of sugarcane. Arx and Muller, the way also pathologists have documented on China. This fungi disease, which kills the ripe cane, is still in existence under the name red-rot (Macinnis 2).

Manjitthika is caused by fungus Colletotrichum falcatum (when it was old). In many cases, it manifests itself only when the cane is time to harvest. Other than it being one of the most prevalent cane diseases, the

red rot is also regarded as the oldest known disease of sugarcane. The illness may have been extremely common around the place where the Buddha made this choice, and the extract is the initial reference to a cane illness.

Manjittihika, [f.], Rubia Manjith is the Bengal madder plant, or madder red. Maha-majun-s.aka is a red flower that grows the madder, munjeeth of Bengal. Rubia tinctorum is a perennial plant that grows in whorled leaves and flowers that are small and yellow with a red root which is native to the southwest of Asia. Manjitthika is translated as colour of madder. Madder or manjit is still utilized as a colorant in India. This plant gives very deep red dye, the turkey red, a bright red obtained on cloth by alizarin on the root of the plant. In Malayalam it is referred to as manchatti, kala(meshika), jingi, bhandi, bhandreeri, mandukaparni, yojanavalli, vikasa, samanga and in Tamil as chevvallikkodi. The other name manchatti has is manjishta and this is because of its dark red colour. Manjishtaragam is a term which refers to the colour of manchatti.

The Chinese Sugar

The earliest known cane sugar product to man was heavy syrup. The inspissated/ thickened juice of the sugar46, phanita, was produced in India c. -500, then the solid amorphous (guda) sugar. It entered South East Asia, and then China, in the first centuries BC perhaps via Buddhism or Hindu kings (Needham, Wang, and Golas 67).

In ancient China, sugar belonged to the name Shimi [shih-mi]. It refers to stone-honey, rock-sweet, loaves of sugar, literally. Sugar thus readied in little cakes, or loaves, as everyday food, was commonly called stone honey. Sarkara, in Sanskrit, means sarcars of sugar, grain, stonelets. At the very time, as early as the third century, these were manufactured in Tongking, of the sugar which had been dried in the sun by evaporation of the juices of the cane. In other cases, they were moulded into small men and tigers and elephants and others. An example of such sweet figurines would be the later Han lion sugars, although it is not certain that sugar in them was of the Southern cane (Schafer 153). According to an eye witness account of Guangdong province, around 1680, the moulded sugar was shaped into people, animals and building shapes and sugared plums were an important part of marriages, whether the girl was wealthy or not (Pomeranz 119). Stone sugar was produced during the T'ang period in various towns such as Lu-chou (southern Shansi), Yuch- chou (northwestern Chenkiang) and Yung-chou (southern Hunan).

Yule quotes the commentaries of Ramusis that sugar refining was being introduced into China through Egypt. Another story, of Cambodia or Chenlah, thus says: in food they make much use of sugar. In China, sugarcane juice was called che and fried and the Japanese term of sugar was sato. I can notice that the Peh Shi (or, as it is generally called, Northern Dynasties History) treats us to a great quantity of sugar consumed in Cambodgia as early as the fifth century of our era. It is impossible not to understand what the words sha- t'ang mean, as they are applied in both China and Japan (sato)" (Polo et al. 45).

Sugarcane was planted very early in southern China and the Szechuan basin, with reference to it in classical Chinese literature dated 241-222 BC, and later accounts of it in later written works. Sugarcane also came in to prominence around 110 BC when a botanical garden was established near (Drevnij) Pekin so as to introduce exotic plants (Deerr 67).

The ancient Silk Road accommodated nearly all the national and ethnic groups of the states of Arabia to Japan. They comprise, among others, Sogdians, Persians, Turks, Syrians, Indians and many others. The greatest traders of the Silk Road were called Sogdians, an Iranian nation, which the Chinese thought that they were born as traders. It is a myth that their mothers feed them sugar in order to make their voices honey and that their baby palms were rubbed with paste in order to attract things worth good money (Thubron 45).

In China the early predominant sweeteners were maltose and honey prior to the introduction of cane sugar. One of the poems in the song of chu (chu tz), the summons of the soul, (Chao Hun) had the following lines: Fried honey-cakes of rice flour and malt-sugar sweetmeats; Jade- like wine, honey-flavoured, fills the winged cups (Birch and Keene, vol. 1).

The use of malt sugar and honey as a sweetener persisted until the era of the Sung dynasty when cane sugar became a commodity in most of China. The refining technique of sugar was enhanced up through the early Tang dynasty (AD 618-907) and at the same time Kwangtung and Szechuan were already recognized as sugar producers (Chen 33).

The sugar market by substituting the current sweeteners increased gradually, as the money economy and the commodity markets developed between the Sung and the Chhing dynasties. Although the South Sung dynasty (AD 1127-1279) was partially assured peace in the Southern part of the country along the Huai River, it was frequently

burdened with the issue of military expenditures. In this fashion, the regime had to come up with the sugar industry to revitalize the foreign trade and to increase the tax returns (Chen 40).

How did sugar come to China?

Sugarcane was discussed in the Atharva Veda dated circa 800 BC and in Manusmriti dated circa 1000 BC. In 200 BC Patanjali said that sugarcane had also been known at Takshasila by about 400 BC. The city of Takshasila in Persia was already a centre of trade and learning even during the reign of Cyrus the great (558-530 BC). This was the place where young men of Magadha went to continue their education. The Jataka Tales help to verify that young men of the whole civilized section of India wanted to study in this city, as well as the ones of Persia and Mesopotamia (Durant 556).

A chapter contained in The History of the T'ang Dynasty relates that a Chinese Emperor sent envoys in 627, to purchase the technique of boiling out sugar, and thereafter commissioned the growers of sugarcane in Yang-chou to squeeze it out in the same fashion, when it turned out that both in colour and taste theirs surpassed that of the Western Regions [of which Magadha was regarded as a part].

The ancient Magadha was called Bihar. The ancient Chinese literature speaks of its capital, Pataliputra, as Pa-lin-fou. The centre of the Nanda Dynasty was Pataliputra and it established the first Indian empire. It was succeeded by the Mauryan Empire which ruled the Indian subcontinent between 325BC and 185BC.

The Land of Sugar

It is related by an Indian legend that miraculously sugarcane grew in the bedchamber of a king named Subandu. A prince Ikshvaku was born of this sugarcane, as Brahmans informed Subandu. The Buddha was also descended by him many generations down and the Buddhists believe that the first food was sugar. It is also said in the legend that the ancestors of the Buddha (the founder of Buddhism) had arrived in the land of sugar or gur, which was the name given by that time to Bengal which was once called Gour Banga. It is considered that this name of the country was obtained in correlation with the fact that this country was able to produce gur (guda, the Sanskrit equivalent of molasses) in large quantities. Go(/a)ur is a variant of the ancient Gauda that means the country of sugar, a term used of much of modern Bengal. The high-land, fair Bengal, the land that sticks out into the sea, a peninsula, is Gwyr (Gower), in the English orthography (Yule, vol.). I 83).

It is expressly written in the Natural History of Su-kung of the seventh century AD: The Emperor Tai-Hung despatched workmen to acquire the art of manufacturing sugar in Lyu (India) and specially in Mo-Ki-To [Bengal]]. Magadha is the obviously the Mokito of the Chinese. Gaura/Gour used to be the capital of Bengal. India as a whole with the exceptions of the Punjab was called Gour in Bengal and this kingdom emerged due to the fall of the Guptas (Mullick 259).

The Itinerary of Xuanzang (Hiuen Tsang) in Bengal.

The fact that Fahien in his overland voyage from Magadha to Tamralipta makes use of the term overland to refer to contacts between the Ganga delta and the Ganga basin is a good indication of contacts with the basin that would persist in later centuries. Based on the preceding travellers, Xuanzang, also known as Hsuean-tsang, Chinese pilgrim, explorer, and diarist took an epic journey to India (AD 629-45) to find Buddhist Scriptures. His graphic narrative, which was published in 646, is a significant source of information about the contemporary Asia. Hiuen Tsang went to Kajangala near the Rajmahal hills, to Nalanda to the east to Pundranagala (the other name) to the east to Kamarupa (Pragjotisha), Brahmaputra valley and arrived at Samatata. Continuing on to Tamralipta he rode further to northwards and reached the capital of Shashanka, Karnasuvarna (Watters II 184 ff.).

Ancient city of Pundravardhana, Hiuen Tsang observed roughly twenty Buddhist monasteries with 3000 monks who learnt the form of Buddhism which was called Hinayana. He also writes about Pundravardhana, which was used to be decorated with beautiful houses, gardens on the river, and abundant with agriculture and crops. Two years after his stay in India, he went back to China where he brought with him 150 pieces of the body of Buddha, 657 books and the formula of making sugar. Hiuen Tsang had the responsibility of introducing into China the process of producing brown cane sugar, which was referred to as shi mi/stone honey in ancient China72. In 640 the Tang emperor Taizong (Tai- tsung) sent a student to learn Indian methods of sugar production at Behar.

Conclusion

The introduction of sugar in China was facilitated by Buddhism. This religion later served as a source of culture and technology exchange when it spread to China via the Silk Road and the sea routes. India was the origin of sugarcane which was attributed to its sweetening and medicinal uses. The Buddhist monks that frequently used to travel between the two regions to visit the sites as well as study had not only sacred texts but also knowledge of agriculture and food

production including even the techniques of producing sugar. Chinese monks visiting Indian monasteries such as Nalanda saw the sugarcane being grown and got to know how sugar could be processed. Back home, they contributed in bringing such practices in China. Sugarcane was grown in southern China as early as the Tang dynasty (7th -10th century CE), and sugar became a prized commodity. Rituals practiced by the Buddhists that also involved the offering of sweets also promoted the consumption and propagation of sugar in the Chinese culture. Buddhism was therefore a source of spiritual concepts as well as technological advancements in the form of farming such as sugarcane.

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