Cashew Apple Liquor Industry in Goa

R. C. MANDAL, D. G. DHANDAR and C. V. DHUME*
I.C.A.R., Research Complex
Goa, India

Abstract

About 20 lakh tons of cashew apples are produced in India annually which are at present being just wasted, except in Goa where it is utilized for the preparation of 'feni'. Sporadic attempts to promote its economic utilization has proved infruitious in other states. The utilization of cashew apples for the manufacture of liquor as a cottage industry in Goa has been described in detail. Further, the possibility of manufacturing industrial alcohol is dealt in brief.

The cashew apple is the swollen peduncle supporting the cashewnut. The apple is soft and juicy when ripe and is acidic and highly astringent. The natural acidity of the juice can be reduced by the addition of 0.25 per cent of sodium chloride. The juice content and the composition of the apples is highly variable. The apple is a rich source of vitamin C (260 mg/100 g) and gives about 35 calories. It contains 9 per cent sugar (mostly reducing sugars), 0.5 per cent tannic acid, 11.6 per cent carbohydrate, 0.2 per cent protein, 0.2 per cent mineral matter, 0.1 per cent fat, 0.09 per cent carotene, 0.01 per cent Ca and 0.01 per cent P.

It is estimated that about 20 lakh tons of cashew apple are produced in India annually, along with 1.66 lakh tons of raw cashewnut from 4.1 lakh ha area (1974–75 estimate). This huge quantity of cashew apple produced is being mostly thrown away except in Goa where it is utilized for the manufacture of 'feni'.

In Goa, approximately 50,000 tons of cashew apple, 70 per cent of the total production (72,500 tons) are utilized in liquor industry which is running on cottage industry basis. Out of total income from cashew production, 35 per cent represents income from apples. Thus, the cashew liquor industry in Goa provides gainful employment to more than 10,000 families at present for a period of three months (March to May). Cashew, being a seasonal crop the *caju* apple distillation process cannot be done throughout the year. This employment opportunity to the cashew growers of Goa gives a good incentive at the appropriate time, when the main rice crop is harvested.

* Chief Inspector of Factories & Boilers, Govt. of Goa, Daman & Diu.

Cashew apples perish within a short time and hence must be processed soon after collection. Since the juice does not keep well longer, it is normally fermented and made into liquor which retains the flavour of fresh juice.

The cashew apple must be collected at the right moment squeezed in the right manner, left to ferment at the right temperature and then distilled to give *caju* 'feni'. It is believed in Goa from the earliest times that the distillation of liquor from cashew apple is also for medicinal purposes for the infants to old-aged.

Test	*I.S.I. Limits for*		*Quality of cashew**	
	Whisky	*Rum*	*Liquor*	*Feni*
1. Total solids (% wt/vol.)	0.2 (max.)	..	0.057	0.009
2. Total ash (% wt/ vol.)	0.02 (max).	..	0.017	0.009
3. Volatile acid as acetic acid (g/100 l absol. alcohol)	20 – 100 g	100 g (max.)	9.93 g	15.2 g
4. Esters as ethyl acetate (g/100 l a absol. alcohol)	8 g (min.)	10 g (min.)	140.8 g	97.3 g
5. Higher alcohol as amyl alcohol (g/100 l absol. alcohol)	30 – 300 g	300 g (max.)	115 g	78.5 g
6. Aldehydes as acetal-dehyde (g/100 l absol. alcohol)	45 g (max.)	45 g (max.)	23.9 g	24.8 g
7. Furfural (g/100 l absol. alcohol)	12 g	12 g (max.)	Nil	Nil
8. Copper as Cu (ppm)	10 (max.)	10 (max.)	3	3
9. Alcohol content	25° U.P.	25° U.P.	24.3° U.P.	24° U.P.

*Samples referred comply with I.S.I. specifications for foreign liquors – Whisky/Rum.

Cashew liquor unlike the Indian made foreign liquor (I.M.F.L.) viz. Brandy, Whisky, Rum, Gin etc., are not made by blending of spirits but distilled exclusively from the pure juice of cashew apples without addition of any extraneous matter.

It has been proved to be a foreign exchange earner in this territory. Since the export oriented liquor is not prohibited, it can be produced by the distillary as per I.S.I. specifications (see page 174) for Whisky (I.M.F.L.) to enter the world market as an export commodity.

Cashew 'feni' is manufactured in Goa for the past four centuries under crude and unhygenic country methods of distilling. These distillaries, known as 'Bhatti' comprise of a copper cauldron 'Bhan', a clay pot 'Lawni' (condenser), a pipe (specially of bamboo) and an open hearth. The copper cauldron is fixed to the open hearth leaning towards the opposite direction of the mouth of the hearth. This copper cauldron has a small hole at the upper half in which a 60 cm long pipe is fixed properly. The other point of the pipe is fixed to the mouth of the clay pot. The clay pot is erected above ground on a stand at a distance, to avoid heat from the hearth. The pipe acts as a transformer of the vapour from the copper cauldron to the clay pot which acts as the condenser. In Goa, about 1617 country stills are established covering almost all the cashew plots.

Juice Extraction: The apples after collection are pooled in a specially prepared depression (locally known as 'Kolmbi') which is prepared by carving stones. The apples are crushed by legs and the juice extracted. The juice flows out and collected in an earthen vessel or in a tin.

At the first crushing by legs, the juice does not squeeze out completely and so the residue (pulp) is bundled (locally known as 'Nudi') by tying with strong creepers and kept under heavy stones to squeeze the remaining juice. In this process, about 3.5 kg cashew apple is required to get 1 litre juice; but through machine extraction, 2 kg apple can give 1 litre juice.

The single roller device recently designed, is somewhat improved over the present method, but the process is slow and the extraction of juice is also not perfect, but there is a more modernised and mechanised process where the performance is satisfactory.

In an improved juice expeller manufactured in Phillippines, the apples are fed to a small hopper and crushed between a wooden roller and a concave wooden board. The juice flows through the perforations of the concave board and the pulp comes out of the retracting wall, the pressure of which is regulated by a compression spring. This device is capable of crushing an average of 140 kg of apple per hour and the juice extraction efficiency to the extent of 70 per cent is achieved. In Goa also, expellers of this type

have been introduced very recently in modern distillaries to improve the extraction upto 70 per cent.

Varieties of Cashew Liquor: The extracted juice is kept for 2 to 3 days to get it fermented to improve liquor quality. The fermentation is verified on the basis of formation of the film floating over the juice. Fermentation efficiency to the extent of 98% is possible if the values of controlling factors like type and kind of yeast, temperature, aeration of juice etc. are kept to the optimum.

From 50 litre fermented juice, 35 litres of uraq is distilled which contains alcohol. The feni is obtained by distilling uraq, mixed with fermented juice at 1:2 ratio, which is powerful form of cashew liquor. A mixture of 30 litres of uraq and 60 litres of juice produce 15 litres of feni which contains 75 per cent of alcohol. To get a litre of uraq, 12 kg of cashew apple and for a litre of feni 30 kg cashew apples are required. For distilling 15 litres of liquor, 3 to 5 hours are required. The cost of manufacturing uraq and feni (15 litres) are estimated to be Rs. 70 and Rs. 140 respectively. In 1975 about 70,000 tonnes of cashew apples produced 11 lakh litres of cashew liquor in Goa, bringing Rs. 17 lakh revenue as excise duty. Industrial spirit and absolute alcohol can also be distilled out of fermented juice.

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