

## Development technology of banana wine

■ AMIT SAKHARAM PATIL

**SUMMARY :** Banana has higher carbohydrate content, so it can be used for wine production. There for, this research was undertaken with overall objectives of the preparation of banana wine, chemical analysis and sensory evaluation of banana wine. Banana wine has lot of medicinal value moderate use of alcohol help to reduce oxidative stress, protect the brain of elder, sharpens the brain. The fresh, graded, ripped bananas were selected. They were peeled and uniform juice was extracted. The ascorbic acid, pectin's enzyme, yeast (*Sacchromyces cerevaceae*) and sugar were added with appropriate proportion. The sample was allowed for primary fermentation for 7-8 days under 18 °C. Then the sample was filtered and allowed it for secondary fermentation again 7-8 days. The sample was filtered again and kept in refrigerator. The precaution was taken that there should be less contamination and oxidation. In chemical analysis alcohol, sugar and pH value were observed 10.5, 0.4 and 4.1 respectively. Sensory evaluation shows that colour and taste was slightly good while odour and palatability was moderately good. The overall acceptability was moderate. It is concluded that banana wine is an innovative and nutritious food drink.

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**B**anana (*Musa paradisiacal*) is called as poor people fruit. In India, cultivation of banana fruit is on large scale *i.e.* 13.90 million tons and available at cheaper rate in market. Maharashtra is the country's largest producer of bananas; growers here have been facing problems like fluctuation in rates and incidence of disease. The state has 72,000 hectares (ha) under banana plantation, while more than 40,000 ha of this is concentrated in the four talukas of Raver, Yawal, Chopda and Bhusaval in Jalgaon district. Due to its perishable nature and lack of storage facilities much of the produce is wasted. At the time of glut in market, the farmers face to economical losses. So to avoid this there is vast scope for banana wineries in India.

In India there are total 61 wineries, Maharashtra share is 58. As many as 30 wineries are in Nasik, 11 in Pune, 10 in Sangli, 3 in Solapur, 3 in Buldhana and one in Usmanabad. Maharashtra registered around 59.84 per cent growth in wine production to 2.11 crore litres. In the last seven years, the grape wine export has increased almost from 75,000 litres 525,000 litres. Out of total consumption of grape wine in India, around 80 per cent wine consumption is from the major cities- Mumbai (39%), Delhi (23%), Bangalore (9%) and Goa (9%), while the rest of the grape wine consumption

*i.e.* 20 per cent is from the rest of India. Till now in India, wine is produced mainly from grapes, apple, strawberry, etc. Because of high glucose content, the ethanol content is more. Due to which high amount of wine can be prepared from banana at cheaper rate.

### EXPERIMENTAL METHODS

All the experiments related to research work entitled -preparation of banana wine was conducted at laboratory of K. K. Wagh College of Biotechnology, Nashik.

#### Ingredient used :

Banana pulp, granulated sugar, pectinase enzyme, potassium metabisulphite or camden tablets or ascorbic acid, wine yeast (*Sacchromyces cerevisiae*) 2-3 per cent sterilized water, sodium metabisulphite.

#### Equipments used :

Fomenter/incubator, refractometer, thermometer, hydrometer, grinder, muslin cloth, centrifugal separator, balance.

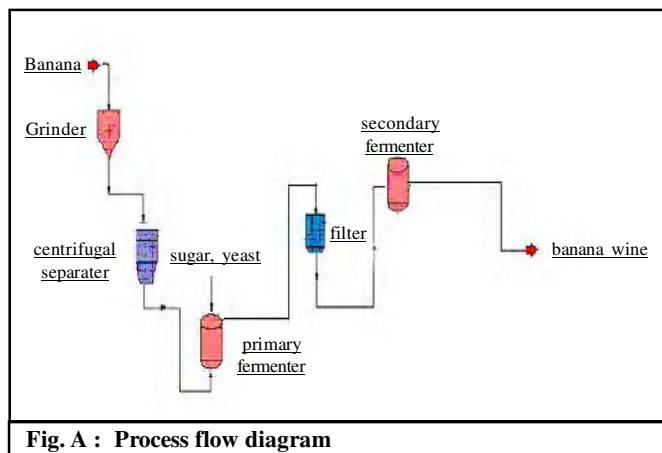
#### Procedure :

- Fresh and graded bananas were selected for extraction of juice by grinder.
- Centrifugal separator was used to separate clear juice of banana and maximize the extraction of juice 0.2

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- per cent pectinase enzyme was added
- After extraction of clear juice ascorbic acid (100 ppm) was added because browning of juice starts after extraction due to oxidation.
- Checked the parameters, such as pH, sugar content, specific gravity.
- Wine yeast *i.e. Saccromyces cerevisiae* was added by inoculating it at temp 40°C and then it was poured in the banana pulp for fermentation.
- Then pulp was poured in the flasks and they were air righted to avoid oxidation. Flasks were kept in the fermentor / incubator by setting of different parameters.
- Primary fermentation was allowed for 7-8 days. After this the mass was filtered by filter paper and sieved and residue was removed.
- Again the mass was poured into flasks and were kept in an incubator for secondary fermentation.
- The content was put in to a bottle and stored it in refrigerator. After some days the sample was chemically analyzed (Fig. A).



### Sensory evaluation:

The acceptability of banana wine was measured in terms of sensory attributed such as colour, odour, taste, palatability and overall acceptability using nine points hedonic scale by a panel of judge. (Gupta,1976)

## EXPERIMENTAL FINDINGS AND ANALYSIS

Two trials for preparation of banana wine were taken. In the first trial 3 samples were taken according to different concentration of sugar.

Sample 1: 12° Brix

Sample 2: 14° Brix

Sample 3: 18° Brix

Among these 3 samples the sample having sugar concentration 18° Brix gave the maximum wine extraction

and gave chemical analysis result according to standard value.

The chemical analysis report of first trial as shown below which shows that the alcohol content was 10 per cent, sugar was 0.1 per cent and pH was 3.6 but the wine was slightly oxidized.

### Chemical analysis :

In trial only one sample having sugar concentration 18° Brix was taken. The chemical analysis report is shown ( Table 1) which shows that the alcohol content was 10.5 per cent sugar content was 0.3 per cent and pH was 4.1. In this wine no bacterial growth was observed.

**Table 1 : Chemical analysis**

Variety	Trial	Titration acidity (g/lit)	Volatile acidity (g/lit)	Alcohol (%)	Sugar (%)	pH
Banana	Trial <sup>Ist</sup>	5.68	0.86	10	0.10	3.6
	Trial <sup>IInd</sup>	5.68	1.2	10.50	0.3	4.1

### Sensory evaluation :

The acceptability of banana wine was measured in terms of sensory attributed such as colour, odour, taste, palatability and overall acceptability using nine points hedonic scale by a panel of judge (Table 2).

**Table 2: Sensory evaluation**

Sr. No.	Points	Average marks	Remark
1.	Colour	6	Like slightly
2.	Odour	7	Like moderately
3.	Taste	6	Like slightly
4.	Palatability	7	Like moderately
5.	Overall acceptability	7	Like moderately

### Conclusion:

- In Maharashtra and also in India there is large production of banana. Due to its perishable nature and lack of storage facilities much of the produce is wasted. At the time of glut in market, the farmers face to economical losses. So to avoid this there is vast scope for banana wineries in India.
- In chemical analysis alcohol, sugar and pH value were observed 10.5 per cent, 0.3 per cent, 4.1, respectively which were within limits.
- Sensory evaluation shows that colour and taste was slightly good while odour and palatability was moderately good. The overall acceptability was moderate.

– Hence, it is concluded that banana wine is an innovative and nutritious food drink and has wide scope in future.

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