VALUE ADDED PRODUCTS FROM RIPE BANANA: BANANA JUICE AND RIPE BANANA POWDER

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Abstract

Banana is the largest grown fruit crop in India. Introduction of tissue culture techniques in banana cultivation has further enhanced its production. The fruit has a very short post-harvest shelf life because of its highly perishable nature. Unlike the developed countries, in India the development of commodities of consumer interest by value addition of fruits is less than 2 % of the annual agricultural produce. Short shelf life and increased production necessitates development of non-conventional products from banana. This laboratory has developed a bench level technology for extracting almost 60 – 70 % of the total soluble materials of banana in the form of its juice and the left over pulp can be dried into a fine powder.

Introduction

Banana is the largest produced and maximum consumed amongst the fruits cultivated in India. It is known as the 'common man's fruit'. It is highly nutritive and very delicious. India ranks first amongst the banana cultivating countries of the world with an annual production share of 25 % of the total harvest [1]. During the past two decades the large-scale cultivation of this fruit crop has undergone considerable changes. Banana is perhaps one of the major crops, which has accepted tissue culture as a mode of propagation especially in India. Shorter harvest times and enhanced yields have popularized the cultivation of this fruit crop with respect to the area of cultivation and production by tissue culture methods.

Banana when ripened is a soft and delicate fruit with a post-harvest shelf life of 5- 10 days [2]. This makes it prone to injury during transport. Further, release of ethylene during bulk storage makes the fruit ripen faster and the fruits generally rot before reaching its destination. Hence, it has always being considered a 'problem fruit' with respect to transportation. These reasons contribute to a local market glut, resultant price crash and subsequent disinterest among the farming community to cultivate it on a large scale. It is hence important to overcome this problem by generating an increased demand of this fruit crop. Exploring possibilities of converting banana into a cash crop by developing products of commercial interest is one way of solving this problem. In developed countries 40 – 50 % of the annual agricultural produce is converted into value added commodities. However, in India it is less than 2 % annually. Such a situation further necessitates the development of value added products.

Experimental

Fruit juices are the most common and demanding products made out of most of the

fruits. Generally, juices are extracted by simple crushing and / or grinding of fruits. However, in case of banana this process results in a sticky, lumpy mass with no juice. For banana juice production, any variety of banana like Basrai '10 Gy' (developed by tissue culture at BARC), Harichal or Cavendish can be used for extraction. A process has been developed to extract almost 60 – 70 % of the total soluble materials of banana as juice. This process has been patented [3]. Taste panel studies were conducted at Food Technology Division, FIPLY, BARC involving 30 panelists [4]. Products evaluated included banana juice [5], ripe banana powder [6] and products made from ripe banana powder such as banana biscuits, banana cake [7] and banana baby food [6].

Results

This technology is capable of extracting 600 – 700 ml juice from one kg of Basrai '10 Gy' variety; 400 – 500 ml from Harichal variety (Fig. 1), and does not involve addition of any external agents such as water and / or enzyme. The left over pulp retains all the aroma of banana. It can be dried and powdered to give ripe banana powder (Fig. 2). Depending on the variety of banana used, specific gravity of the juice varied from 1.08 – 1.12 and its pH was 4.4 – 4.7. The solid content was found to be 24 – 27 % and it contained between 16 – 28 % sugar. Taste panel studies showed general acceptability of non-conventional products developed from banana [4]. The dry powder can be used as an additive in confectioneries, milkshakes and baby foods. Other products developed from ripe banana powder in our laboratory include biscuits, cake and baby food (Fig.3).

Fig.1

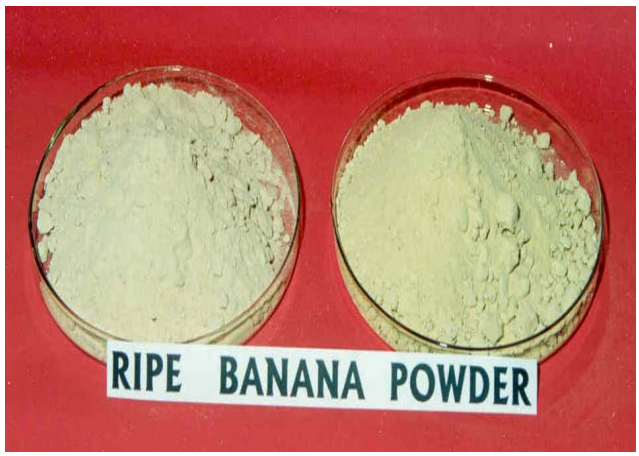

Fig. 2

Fig.3

Conclusion

Scale-up of this technology provides an excellent scope for the development of non-conventional products from banana. The extracted juice after a dilution is ready to serve as nectar and / or after carbonation as a drink. Banana juice also can be used for the production of banana wine by fermentation, which has a lot of commercial value.

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