

Studies on Date Palm Syrup Preparation Technique and its Storage

M. S. Arefin, M. R. Alam, M. K. Begum, M. S. Islam, M. M. Hossain, M. J. Uddin and M. A. S. Jiku

Bangladesh Sugarcane Research Institute
Ishurdi, Pabna, Bangladesh

ABSTRACT

Date palm syrup preparation technique was developed during the period 2007-2010. The quality of date palm syrup was studied during the period before and after storage. The date palm syrup was prepared by open pan boiling method. Date palm syrup was produced manually at 65 %, 70 %, 75 %, 80 % & 85 % Brix concentrations, and cool at room temperature. Prepared cool syrup was bottled in 250 ml oven proof bottle and preserved at room temperature in Physiology and Sugar Chemistry laboratory of BSRI. The physical and chemical properties of date palm syrup were evaluated before and after storage. The quality of date palm syrup at 75 % & 80 % Brix concentrations were found excellent keeping quality, and observed suitable for storage throughout the year.

Key words: Date palm syrup, Preparation, Storage, Quality.

INTRODUCTION

The importance of date palm tree (*Phoenix dactylifer* L.) was appreciated by many nations over the centuries. This is due to economical as well as nutritional value of its fruit and syrup, hence it is one of the eldest cultivated tree crops (Fayadh and Al-showeman, 1990).

Date palm juice contains higher percentage of reducing sugars than cane juice. Due to higher reducing sugar exists in prepared date palm gur which are hygroscopic in nature, and absorb moisture from surrounding atmosphere and quickly liquifies. On storage, fermentation occurs in liquid gur, and becomes unfit for human consumption. As such preservation of date palm gur is a problem. Syrup preparation from date palm juice and bottling for preservation may be popularized to consumers for its taste and aroma. But due to its shorter self-life it cannot be preserved for consumption through out the year.

Date palm syrup might be considered as one of the innovative and attractive by-products in date processing for habitants in west and southwest Asia. Date palm syrup, which is an important by-product of dates, was obtained by water extraction and evaluated as a substrate for baker's yeast production, in batch laboratory-scale fermentation. The effects of different carbon sources indicated that date palm syrup could be evaluated as a favorable carbon source in baker's yeast production.

The date palm syrup is a food of high nutritional value. It provides natural sugar in the form of glucose and fructose. This sugar is ready for immediate absorption, and is therefore, infinitely superior to cane sugar. It is usually taken raw with milk, which makes

it highly nutritious in most respects. The traditional use of date palm syrup is mainly on specific occasions e.g. poured on cooked and sometimes fermented clough on occasion of peoples' birthday. Consumption is also more intense during cold periods of years. Date palm syrup is widely used for softening, and preserving it in jars, and in home-made confectionery. Use on bread has become increasingly accepted. Early records reveal that date palm syrup in the past many have been an overland export article between the Gulf area and China, a product even more concentrated than the date it self and easily turned into a nutritious drink. Gur/syrup quality is considered by its sucrose content, reducing sugars and colour transmittance etc. (Gopal and Chiranjivi, 1959). The quality of gur is dependent on composition of juice from which gur is made. The methods of pan boiling, and juice processing techniques are also associated with the quality of gur/syrup.

MATERIALS AND METHODS

In order to determine self-life of date palm syrup, an experiment was conducted at Physiology and Sugar Chemistry division of the Bangladesh Sugarcane Research Institute (BSRI) during 2007-08, 2008-09 and 2009-10 juice topping seasons. Juice was collected from date palm garden of BSRI in month of November-January. Syrup was prepared by open pan boiling method at 65%, 70%, 75%, 80% and 85% Brix concentrations, and cool at room temperature. Prepared cool syrup was bottled and preserved one year at room temperature in Physiology and Sugar Chemistry laboratory of BSRI. Sucrose percent, reducing sugars percent, colour transmittance and pH of date palm syrup was determined before and after preservation of January and September months in 3 replications. Sucrose per cent was determined by polarimeter. The colour transmittance of diluted date palm syrup was measured as optical density at 560 nm using a spectrophotometer. Reducing sugars were determined according to Lane and Eyrone method. The pH value was determined using a research pH meter. Data have been presented graphically (Fig.1-5).

RESULTS AND DISCUSSION

Sucrose

The sucrose per cent of date palm syrup at 65, 70, 75, 80 and 85 Brix before and after preservation are shown in Figures 1-5. The sucrose per cent of date palm syrup at 75, 80 and 85% preserved throughout the year at room temperature was observed almost unchanged (62.7 & 62.3, 64.0 & 63.8 and 69.1 & 69.0). The same preserved at 65 & 70 % Brix of date palm syrup was found to be deteriorated faster than that of 75, 80 and 85% Brix of date palm syrup. These results were agreed with results observed by Gour *et.al.* (1979) who reported that a good quality syrup/gur should have high sucrose per cent and keeps unchanged without any deterioration.

Reducing sugars

Reducing sugars, reducing sugars per cent of date palm syrup at 65 and 70 % Brix were increasing to some extent during preservation period. But the trend of reducing sugars per cent of date palm syrup at 75, 80 and 85% Brix showed similar results (Fig. 1-5). These findings were agreed with results of Jabber *et. al.* (2010). Syrup/gur containing

higher per cent of reducing sugars are generally discouraged for preservation since reducing sugars are hygroscopic in nature, and leads to poor keeping quality and low self-life.

Colour transmittance

At 65, 70, 75, 80 and 85 % Brix, colour transmittance of date palm syrup was shown in Figures 1-5. The colour transmittance of date palm syrup at 75, 80 and 85 % Brix before and after preservation was almost similar (54.0 & 50.0; 59.0 & 57.0; 58.0 & 56.0). Date palm syrup preserved at 65 and 70 % Brix decreased faster than that of date palm syrup preserved at 75, 80 and 85 % Brix. Similar results were observed by Sarker et. al. (1985).

pH value

The pH values from different Brix (65, 70, 75, 80 and 85 %) of date palm syrup before and after preservation have been shown in Figures 1-5. There were no significant differences among Brix of date palm syrup before and after preservation. Lower pH indicates acidic in nature. In case of brix of date palm syrup before and after preservation were obtained equivalent to neutral in nature. So that, all Brix concentrations of date palm syrup were safe for human consumption (Arefin, 2010).

From these results obtained, it has been found that syrup containing 75, 80 and 85 % Brix can easily be preserved throughout the year without any deterioration of its quality. But after preservation, 85 % Brix of date palm syrup was precipitate (becomes crystal in nature) by sucrose. The overall quality of date palm syrup under 75-80 % brix remained unchanged.

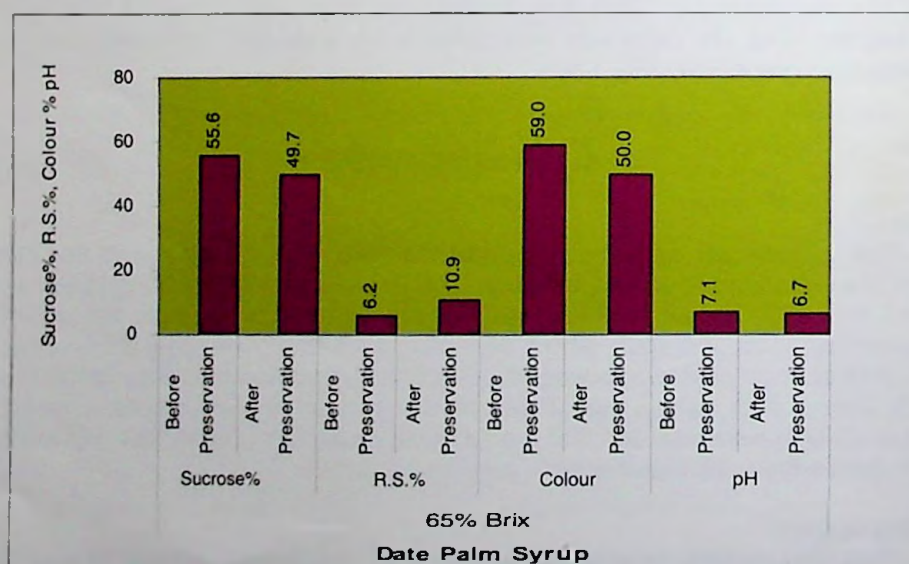


Figure 1 : Sucrose%, R.S.%, Colour and pH of Date Palm Syrup under 65% Brix.

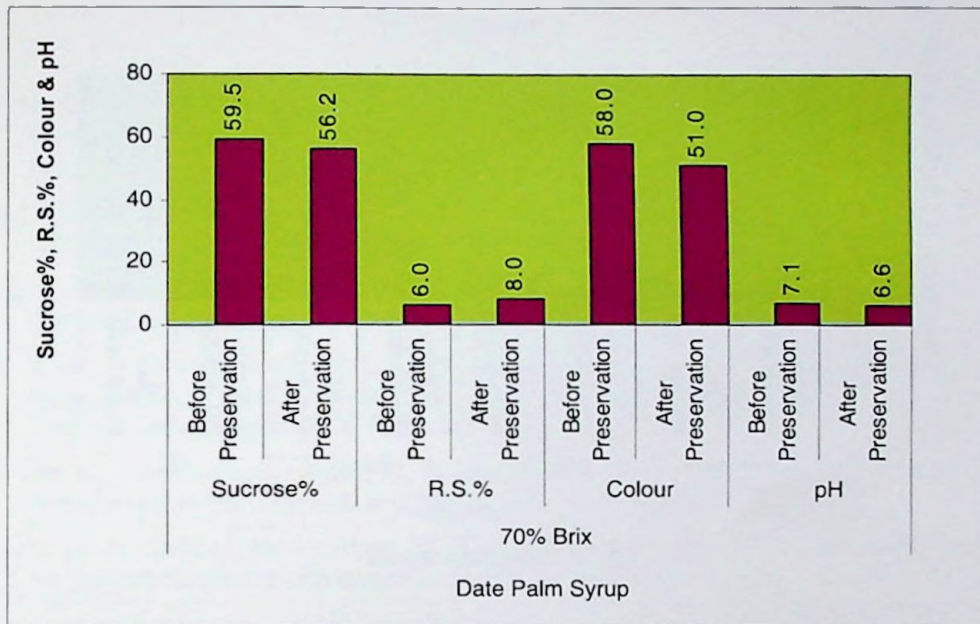


Figure 2 : Sucrose%, R.S.%, Colour and pH of Date Palm Syrup under 70% Brix

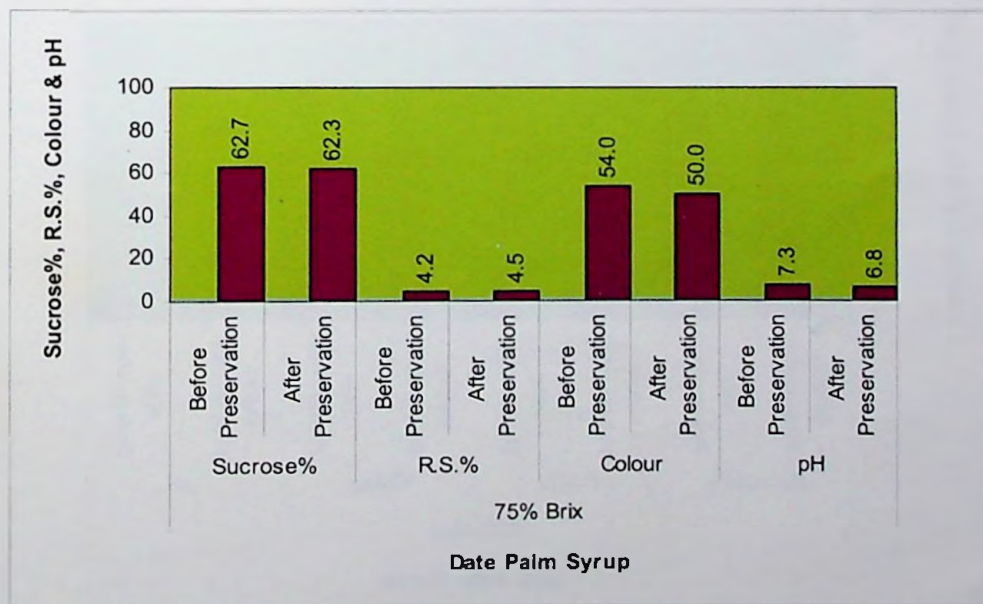


Figure 3 : Sucrose%, R.S.%, Colour and pH of Date Palm Syrup under 75% Brix

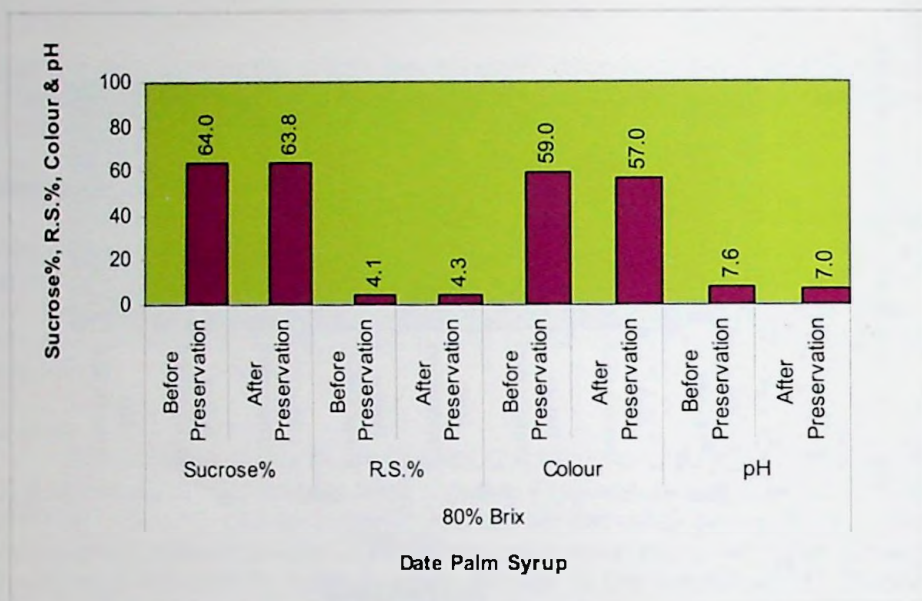


Figure 4 : Sucrose%, R.S.%, Colour and pH of Date Palm Syrup under 80% Brix

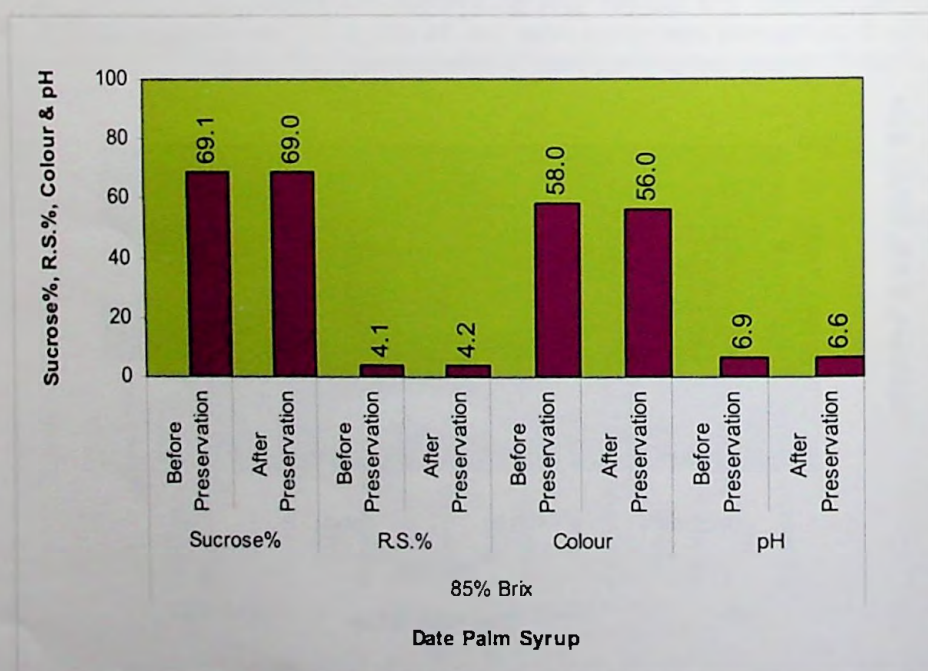


Figure 5 : Sucrose%, R.S.%, Colour and pH of Date Palm Syrup under 85% Brix

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