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308 Lasani Town, Sargodha Road, Faisalabad - Pakistan
Mob: +92 300 3008585, Fax: +92 41 8815544
E-mail: editorpjn@gmail.com

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Mangodeen - A New Mango Leather Product

Omer Khidir Ahmed
Department of Horticulture, University of Khartoum, Khartoum, Sudan

Abstract: A new fancy dried mango leather product named Mangodeen was developed. Pure mango juice was prepared from fully ripe fruits and sodium metabisulphite was added to prevent browning, oxidation of ascorbic acid and contamination. Additive materials namely: cane-sugar, bee-honey, lime juice and Aradeib pulp (*Tamarindus indica*) were added to improve quality and prolong storage of Mangodeen. Prepared samples were spread onto metal trays and left to dry under the sun. Mangodeen was packed in thin polyethylene bags and stored for 3-6 months at room temperature. All additive materials were found to improve the quality and prolong storage of Mangodeen.

Key words: Mangodeen, mango leather, cane-sugar, bee-honey, lime juice

INTRODUCTION

There is a large production of mango in remote areas of Darfur, Sudan. However, tremendous losses are encountered due to poor transportation and storage techniques. Ahmed and Ahmed (2014) studied optimum harvesting dates for mangoes. Dehydration of mango into fruit slices was also explored (Ahmed and Ahmed, 2012) to reduce these losses. Dehydration of mangoes into cereal flakes was tried to further cut on these losses (Ahmed, 2015).

Mangodeen is a new fancy mango product developed to replace 'Gamardeen' (a dried apricot leather). 'Gamardeen' is used as a drink during the fasting month. Mangodeen can be soaked in water and used as a drink during 'Ramadan' the fasting month. It is hoped that Mangodeen would replace 'Gamardeen' which is imported and requires hard currency.

MATERIALS AND METHODS

Plant material: Fruit samples were taken from the same mango cultivars ('Kitchiner', 'Alphonse' and 'Dibsha') grown in the same orchard as described before (Ahmed and Ahmed, 2012).

Preparation of Mangodeen: Pure mango juice was prepared from handpicked 100 uniform and ripe fruits. The fruits were cleaned with tap water and squeezed by hand to soften the flesh. A small cut was then made into the fruit skin through which the juice was extracted manually. The weight of collected juice, skin and seed (stone) were determined using a top loading balance, to establish the overall drying ratio. The collected juice was strained through a plastic wiremesh to remove as much fiber as possible. Sodium metabisulphite at concentration of 750 ppm was added to the pure juice to prevent oxidation of ascorbic acid, browning and contamination by micro-organisms during preparation of the samples while drying.

Additive materials namely: cane-sugar, bee-honey, lime juice and Aradeib pulp (*Tamarindus indica*) were added to the mango juice to improve quality and prolong storage time of the dried mangodeen, even after sodium metabisulphite had disappeared. Three weights of each additive material (50, 100 and 200 g) were separately blended with one kg of mango juice for one minute using a kitchen blender. Prepared samples were then spread onto metal trays lined with polyethylene sheets. The sheets were rubbed in using ground-nut oil for easy removal of the product after drying (Fig. 1). The initial thickness of the prepared sample was about 1.0 cm. The samples were then left for three days to dry under sun. At the termination of the drying period, the thickness of the dried samples was reduced to 3 mm Mangodeen (mango leather).

Packaging and storage of Mangodeen: After drying, processed samples of Mangodeen (Fig. 2) were packed in thin polyethylene bags and kept in a styrofoam container with a dimension of 30 x 40 x 50 cm, then stored at room temperature (30°C). Mangodeen samples were stored for 3-6 months. The temperature inside the container was between 25-30°C from July to October and between 20-25°C from October to December.

RESULTS AND DISCUSSION

Sun dried Mangodeen stored successfully for six months in polyethylene bags. However, Kiersten (2013) was able to store mango leather in parchment paper for one month at room temperature after baking at 79.4°C (175°F) for 3-4 h. On the other hand, Kelly (2013) reported that oven dried mango fruit roll-ups lasted for only one week when stored in an air-tight container. Gujral and Khanna (2002) found that soy protein concentrate lowered the sensory acceptability of mango leather whereas sucrose and skim milk powder at levels

Fig. 1: Drying of mango pulp. 200 g of wheat flour, sorghum flour and 'Geeria' flour were mixed with 1 kg of pure mango juice to produce mango paste. The paste was baked on a hot plate (140-170°C) for 20-30 sec to produce flakes with 0.5 mm thickness

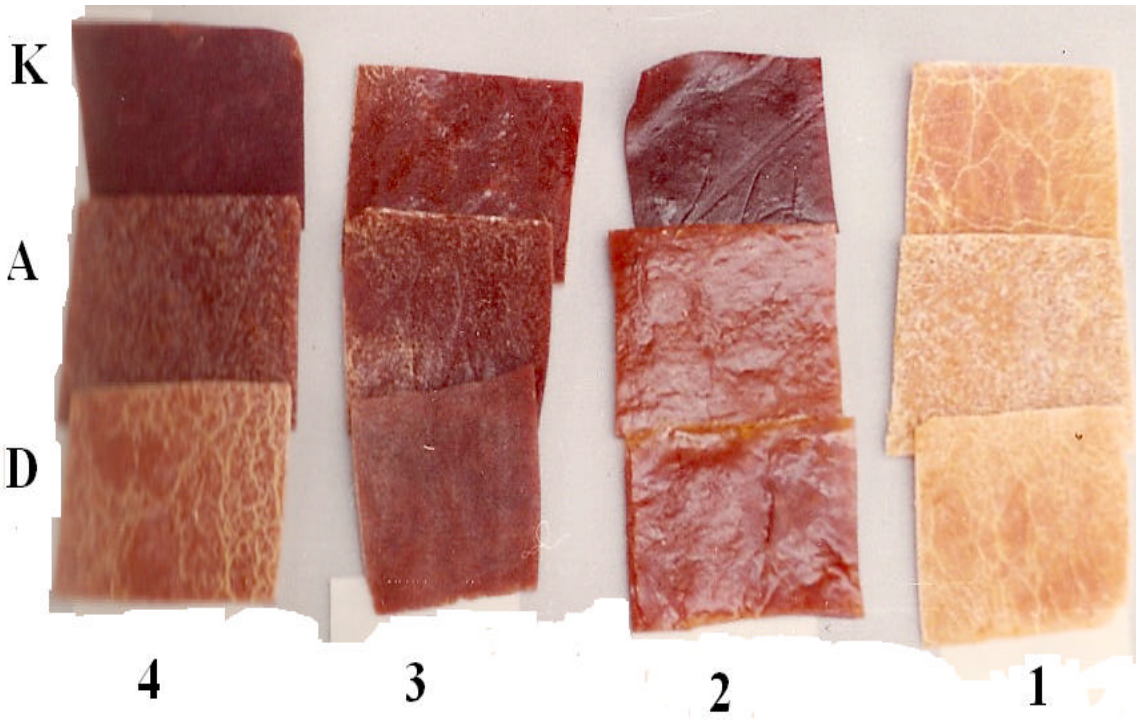

Fig. 2: Mangodeen. K: Kitchiner, A: Alphons, D: Dibsha. 1: Cane-sugar Mangodeen, 2: Bee-honey Mangodeen, 3: Lime juice Mangodeen and 4: Aradeib pulp (*Tamarindus indica*) Mangodeen

of 4.5% each resulted in mango leather with the highest acceptability. Gujral and Khanna (2002) recommended 10% moisture for the highest acceptability of dried mango leather.

Regardless of the cultivar and additive material used, Mangodeen samples retained 55-95% of their initial ascorbic acid content after six months of storage at room temperature (30°C). This is in agreement with Gil *et al.* (2006) on mango cubes and Stephane *et al.* (1997) on mango custard.

Future work along this line will focus on the effect of additive materials namely: cane-sugar, bee-honey, lime juice and Aradeib pulp (*Tamarindus indica*) on the keeping quality of Mangodeen.

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Current Address of the Author: Department of Biology, Faculty of Science, Taif University, P.O. Box 888, Taif-21974, Saudi Arabia, E-mail: omerkhidirahmed@yahoo.com