

## **Preparation and quality analysis of unfermented mango (cv. RASPUR) beverages**

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### **ABSTRACT**

A laboratory experiment was conducted at College of Horticulture, Mudigere. The mango beverages such as pure juice, sweetened juice, RTS, nectar and squash were prepared from cv. Raspuri with different proportions of juice, TSS and acidity. The beverages were kept under room temperature for period of 0 to 6 months were analyzed at bimonthly interval. The results indicated that among different mango beverages tested, squash had better storage life with higher chemical composition and sensory quality characteristics.

**Key words :** Nectar, squash, beverages, Raspuri.

**M**ango is considered to be the King of fruits with a delicious taste, excellent flavour and attractive fragrance. It is also an excellent source of vitamin-A. Mango fruits are mainly consumed as a table fruit in India. It is preferred as processed product in Western and European countries. In recent days the processed products of mango are gaining importance in our country. The commercially grown cultivar Raspuri is suitable for table and processing (Srivastava, 1998). The fruits of Raspuri are good in colour, soft flesh and good flavour and are suitable for preparation of juice. Hence, mango beverages from cv. RASPURI were prepared and evaluated for pure juice, sweetened juice, RTS, nectar and squash for varying chemical and sensory characteristics.

### **MATERIALS AND METHODS**

The experiment was conducted at College of Horticulture, Mudigere. Fully mature "Raspuri" mango fruits were procured and allowed to ripen at room conditions were used for study. After ripening, fruits were washed, peeled and the pulp was crushed with screw type juice extractor. The juice was filtered by using sterilized muslin cloth, the juice obtain by this process was considered as pure juice. Sweetened juice was prepared by using 80% juice, 10% TSS and 5% acidity. RTS were prepared by using 10% juice, 13% TSS and 0.3% acidity. Nectar was prepared by using 20% juice, 13% TSS and 0.3% acidity and squash by using 30% juice, 50% TSS and 1% acidity. All juices were replicated for five times. The potassium permanganate solution (KMS) was applied at the rate of 250ppm to all the juices and were filled into sterilized bottles and sealed (Srivastava

and Sanjeev Kumar, 1993). The beverages were analysed at bi-monthly interval for their chemical and sensory quality parameters.

The chemical composition of mango beverages were analyzed for pH, acidity, reducing sugar, total sugar, ascorbic acid (Ranganna, 1979) and total soluble solids (TSS) by a hand refractometer at bimonthly interval. Sensory evaluation was carried out by a panel of 10 judges using 10 point scale for general appearance, colour, taste, flavour and consistency. The data were analyzed statistically by using a complete randomized design (CRD) was compared at a probability of 5% level (Sundararaj *et al.*, 1972).

### **RESULTS AND DISCUSSION**

The data on chemical composition of different beverages at bi-monthly interval is presented in Table 1. Significant differences were observed in pH, TSS, acidity, reducing sugar, total sugar and ascorbic acid. Highest pH (2.90) content was noticed in squash while it was minimum in pure juice (2.39). Squash had highest TSS (45.52%) and lowest in sweetened juice (4.62%), high acidity (0.67%) was observed in squash and minimum in pure juice (0.10%). Higher reducing sugar (17.74%) was recorded in squash and lowest in pure juice (2.20%). The total sugar recorded was highest (28.06%) in squash and lowest in sweetened juice (2.65%). The ascorbic acid content was highest in squash (4.00mg/100ml) and lowest in RTS (1.83 mg/100ml) after 6months storage of all the beverages. The results showed that there was no much variation in pH after different months of storage, where as considerable variations were recorded in other

**Table 1 : Chemical composition of mango (cv. RASPURI) beverages at 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> month of storage**

Treatments	pH			TSS			Acidity			Reducing Sugar			Total Sugar			Ascorbic Acid		
	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>
Pure juice	2.27	2.87	2.39	15.24	12.80	5.30	0.33	0.28	0.10	4.33	3.04	2.20	11.25	9.02	2.85	18.43	10.55	2.66
Sweetened juice	2.87	3.07	2.40	8.64	07.95	4.62	0.42	0.35	0.17	3.04	2.81	2.26	5.43	4.93	2.65	13.74	9.94	3.30
RTS	3.04	3.04	2.60	11.66	10.90	8.56	0.28	0.27	0.14	4.23	4.00	3.70	7.19	6.94	5.07	2.22	1.90	1.83
Nectar	2.83	3.17	2.86	12.40	07.94	9.70	0.27	0.25	0.18	4.61	4.32	4.47	7.23	7.64	5.44	3.62	2.52	2.48
Squash	3.00	3.01	2.90	48.80	47.60	45.52	1.00	0.94	0.67	19.91	19.62	17.74	28.90	28.60	28.06	5.99	4.90	4.00
S.E.±	0.037	0.057	0.038	0.287	2.011	0.216	0.012	0.020	0.029	0.055	0.379	0.119	1.156	0.228	0.200	0.640	0.223	0.111
C.D. (P=0.05)	0.110	0.169	0.111	0.850	5.940	0.637	0.032	0.059	0.086	0.161	1.816	0.351	3.411	0.671	0.589	1.89	0.657	0.326

**Table 2 : Sensory quality of mango (cv. RASPURI) beverages at 2<sup>nd</sup>, 4<sup>th</sup> and 6<sup>th</sup> month of storage**

Treatments	General appearance			Colour			Taste			Flavour			Consistency		
	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>	2 <sup>nd</sup>	4 <sup>th</sup>	6 <sup>th</sup>
Pure juice	8.80	6.70	2.70	8.60	6.40	2.60	6.40	5.50	4.40	7.70	6.40	2.10	7.00	6.10	3.00
Sweetened juice	8.40	6.80	3.60	8.20	6.40	3.70	7.10	6.50	4.60	8.30	6.70	2.70	8.20	6.20	2.90
RTS	8.60	7.50	4.50	8.60	7.60	6.50	8.80	7.70	4.90	8.30	6.70	6.50	8.00	7.10	6.80
Nectar	9.30	7.90	6.90	8.80	8.60	7.40	9.00	8.30	7.10	8.40	8.30	6.80	8.50	7.40	6.80
Squash	10.00	8.70	8.30	9.70	9.00	8.10	10.00	9.50	8.20	9.60	9.00	8.20	6.40	6.40	6.30
S.E. ±	0.447	0.203	0.418	0.510	0.114	0.110	0.490	0.126	0.161	2.182	0.161	0.105	0.447	0.144	0.126
C.D. (P=0.05)	1.319	0.597	1.234	1.504	0.336	0.323	1.445	0.373	0.476	6.440	0.476	0.509	1.319	0.423	0.373

parameters might be due to high TSS, reducing and non-reducing sugars.

The sensory quality parameters are presented in Table 2. Significant differences in general appearance, colour, taste, flavour and consistency were observed in different beverages at storage. The general appearance score was maximum (8.30) in squash and lowest in pure juice (2.70). The superior colour was noticed in squash (8.10) and lowest (2.60) in pure juice, good taste was recorded by squash (8.20) and poor taste (4.40) by pure juice, excellent flavour was noticed in squash (8.20) and poor flavour (2.10) in pure juice. The higher consistency was recorded by Nectar and RTS (6.80 each) and lowest in sweetened juice after 6 months of storage.

After six months of storage period, though there was reduction in chemical composition and sensory qualities of beverages compare to 2 months and 4 months of storage period is due to non-enzymatic browning (NEB) was confirmed with the earlier report of Kalra *et al.* (1991). The results indicated that squash prepared by using 30% juice, 50% TSS and 1% acidity being the best beverage.

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