Comparative studies of the quality of fruit juices being sold in local market Nagpur, India

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Abstract:

Nagpur is a very hot city in India. Tetra pack juices are the most important part of human diet. Therefore it is very necessary to check the quality of these fruit juices and it should be upto the mark. In the present study two homemade juices and two tetrapack juices of Grapes and Pineapple which were sold in local markets were taken. They were analysed for their quality. The parameters checked were Total soluble solids, pH, Ascorbic acid content and acidity. They were determined by standard methods. Resultant parameters of homemade and packed juices were different from each other. It was found that homemade juices were better in terms of nutritional and chemical composition than packaged fruit juices in the market.

Keywords : Grapes, Pineapple.

Introduction :

Fruits are a part of the flowering plant. They are highly perishable which make upto 39% of food intake of people living in developing countries. Fruits have been shown to contain high amount of minerals, moisture, low ash and crude fibre as a source of sugars, vitamins, low proteins and lipids. Fruit juices have a very low content of fat and sodium . The second largest component is carbohydrate which ranges between 3 to 25%.These are mostly sugars, glucose, fructose and sucrose being the most abundant. Carbohydrates are responsible for energy provided by the fruit juice. Different acids present include mainly citric, tartaric, malic, acetic, lactic and ascorbic acid. Vitamins are also present in the fruit juices. The abundance of vitamins depends on the soil, species of fruits and the amount of dietary fiber. The most common ingredient in juices are fruits or reconstituted juice, water, preservatives, sugars, acid and colour[1].Remarkable success has been achieved in grape production and productivity levels in certain countries of the region such as India and Australia .Grapes are rich in antioxidant property and can prevent oxidative damage to cell. Grape juices are Alkalizer, which purifies the blood. Its consumption can inhibit the growth of cancerous cells[2].Grapes has many beneficial health effects[3,4].Pineapple is a tropical fruit which grows in countries which are situated in tropical and sub tropical regions. Pineapple is an important food which can be eaten fresh or eaten in a processed form. It is composed of nutrients which are good for human health . This is due to researches carried out on the relationship between nutrients in pineapple and human health[5] .

Methods and materials :

For the present investigation four commercially tetra pack and homemade grapes and pineapple juices were taken. The homemade juices were botteled in an airtight screw cap sterilized glass bottles and refrigerated at 5^0 C prior to analysis[6] .The parameters analysed were pH, Free acidity, Density, Estimation of glucose and vitamin C. All standard methods were used for the analyzation of parameters .The study was conducted to evaluate the quality of fruit juices by studying different physicochemical properties. The analysis is as follows.

Observation Table:

Table 1:- Physicochemical parameters of fruit juices

Samples No	**Grape I** (Tetra pack)	**Grape II** (Home made)	**Pineapple I** (Tetra pack)	**Pineapple II** (Home made)
pH	2,91	3.45	3.56	3.52
Conductance	0.119	0.117	0.111	0.113
Density	1.0303	1.0462	1.0225	1.0033
Free Acid	0.081	0.055	0.064	0.072
Carbohydrate (g)	41.58	13.86	51.97	10.39
Amino acid (g/L)	0.0322	0.2326	0.1892	0.1964
Vitamin C (g/L)	6.375	10.0	11.12	9.0

Result and Discussion:

Fruit juices tend to have low pH, indicating its acidic nature. All samples are having acidity. In various fruit samples conductance gives an idea about pasteurization ,sugar content and adulteration in fruit juices. There will be difference in conductance due to different sugar content .Higher sugar contents show more conductance due to low electrical conductivity of the solution. Density shows solid content in sample. Higher density was investigated in sample Grape II and lower density in sample Pineapple II. Free acid gives idea about acidity of sample. Higher acidity was found in Sample Grape I and Low in sample Grape II. Maximum amount of glucose was found in sample Pineapple I and minimum amount in sample Pineapple II. Amino acids are biologically important organic compound containing amino and all the samples were found to contain amino acids. Vitamin C is also known as ascorbic acid . It is highly efficient antioxidant, lesser oxidative stress, a substrate for ascorbate peroxides in plants and enzyme cofactor for biosynthesis of various important biomolecules. Vitamin C is used in treatment of cancer, cardiovascular diseases and common cold. Ascorbic acid is very important parameter of nutrition quality of fruits . The present investigation shows that higher amount of ascorbic acid was found in Pineapple I and lower amount in Grape II.

Conclusion:

Resultant parameters of homemade and packed fruit juices are different from each other . The pH of samples analysed was to be in the range 2.91 to 3.56 which is within a permissible limit. Free acidity is within range of 0.055 to 0.081. Conductivity is nearly same in all samples. Density of samples ranges from 1.003 to 1.046. The packed fruit juice sample has higher value of carbohydrate than homemade fruit juices. Homemade fruit juices reduced the sugar content and increased the vitamin C content. Homemade fruit juices are better in terms of nutritional and chemical composition than industrially packaged fruit juices in the market.

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