



A STUDY ON LOW TSS GRAPE JAM: WASTE UTILIZATION & RECIPE STANDARDIZATION

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ABSTRACT

The present study on Low T.S.S. grapes are not suitable for table purpose and can be available at low cost so to utilize them in a product like Jam can prevent the waste as well as enhances the shelf life of the product. Moreover grapes are high in natural pectin content and 'grape cure' is utilized as the remedy for various diseases. Jam is the product prepared by boiling the fruit pulp with sugar to desired T.S.S., for the prescribed product sugar to pulp ratio was varied (40:60, 50:50, 55:45) with respect to standard (45:55) where other ingredients kept constant as with the standard. Results were analyzed for sensory and for the qualitative analysis from above varied ratios(sugar/pulp) the sample with 50:50 found best .

KEYWORDS

T.S.S, waste utilization, sugar to pulp ratio, sensory and qualitative analysis.

INTRODUCTION

Grapes are rich sources of nutrients and highly valued for its rich content of sugar i.e. formed almost entirely by glucose and varied from 15 to 25% (in different varieties) glucose absorb quickly in the body and supply heat and energy. The therapeutic value of grapes is closely linked with its richness in pure glucose , studies have indicated that production of energy essential for proper functioning of heart and organs depends on the metabolism of glucose , thus these are highly valued in weak digestion, general debility and fever (Bhatnagar D.K. 1991).

Waste utilization is the key aspect to recover the losses from total production and to store them for a longer period and making available even during off season. 75,866 squares of world dedicated to grapes. Approximately 71% of world grape production is used for wine, 27% as a flesh fruit and 2% as a dried fruit. World production of grapes is estimated to be 57 million tones per year. (source: FAO)

In India, Maharashtra, Karnataka, Punjab and Andhra Pradesh are major growing states of grape [National horticulture board, government of India].Grapes with low T.S.S are not suitable for table purpose so they can be converted in many products like jam, chutneys, etc with the purpose of waste utilization and storing them for a longer period (Lal Singh and Girdhari Lal 1941):. The preparation of grape paste for use in jam and wafer manufacture from standard grapes (Sholtset *al.*, 1990). Concerned study was undertaken to utilize the waste to study the physical parameters and to standardize the recipe of the grape jam.

MATERIALS AND METHODS

The present project entitled 'Preparation of Grape jam' was conducted in MGM College of Food Technology, affiliated to MAU, Aurangabad.

Raw Materials Collection:

Low TSS having unfair quality grapes, other ingredients like Sugar, citric acid, pectin, etc. was purchased from local market.

Method of Jam Preparation:

For preparation of jam, Low TSS having unfair quality grapes was selected. These fruits were cleaned and peeled manually. The pulp was extracted by hand press extraction method. Different combinations of grape pulp and sugar were prepared as given Table No.1

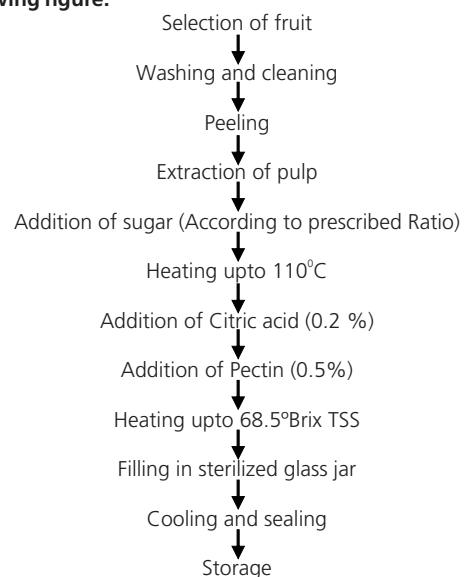
Sample code	Pulp (%)	Sugar (%)	Citric acid (%)	Pectin (%)
Control	45	55	0.2	0.5

A	40	60	0.2	0.5
B	50	50	0.2	0.5
C	55	45	0.2	0.5

Table No.1 combinations of grape pulp and sugar

The pulp was blended in mixer so as to form a homogenous mass. The ingredients like sugar, citric acid (0.2%) and pectin (0.5%) were added. This mixture was cooked with frequent stirring till the temperature reached 1100 C in absence of free flowing water. The end point of heating was indicated when the TSS reached at 68.5 Brix. The jam was poured in previously sterilized glass jars and cooled.

The flow chart for preparation of jam is depicted in following figure:



Organoleptic evaluation of Grape Jam:

The Organoleptic acceptability was determined by a panel of semi trained judges. The samples of Grape Jam were evaluated for the quality attributes such as appearance, color, taste, texture and overall acceptability by using 9 point hedonic scale.

RESULTS AND DISCUSSION

The present project was undertaken with an objective to utilize low TSS grape in the preparation of jam. The Jams were prepared from homogenized grape pulp with sugar in different proportions (45:55, 40:60, 50:50, 55:45). The Jams were evaluated for chemical composition and Organoleptic properties.

8. Fruit and Vegetable Products, ICAR, New Delhi.
 Sholts EP, Karakozova EV, Sokolov AS, Okolelov VS, Smirnov2., (1990) : Paste from standard grapes (for jam making) Pischevaya-promyshlennost 2:20-21.

Chemical composition of Jam:

The jams were prepared under uniform laboratory and hygienic condition. (Ranganna S. and Siddapa G.S.1977) At the final stage of jam preparation, heating was stopped when the TSS content reached 68.5° Brix, the titratable acidity of jams obtained in various proportions ranged from 0.86 to 0.96 percent, the pH of jams prepared in different proportions ranged from 3.4 to 3.7, The total sugar of jams obtained in different proportions varied from 65.7 to 69% (Variations may be due to change in sugar percentage), The reducing sugar content of jams obtained in different proportions ranged from 36.3 to 41.9 % & The non-reducing sugar content of jams was in the range of 25.2 to 29.4 % . (Cameron L. 1948)

Sample code	Sample Ratio	TSS (°Brix)	Acidity (%)	pH	Total Sugar (%)	Reducing Sugar (%)	Non-reducing sugar (%)
Control	45:55	68.5	0.92	3.5	67.3	38.3	29
A	40:60	69	0.86	3.7	69	41.9	27.1
B	50:50	68.7	0.96	3.6	65.7	36.3	29.4
C	55:45	68.9	0.86	3.4	65.7	40.5	25.2
Mean		68.7	0.90	3.5	66.9	39.2	27.6

Table No.2 Chemical analysis of Jam prepared from Low T.S.S. grapes

Organoleptic properties of jam :

The jams prepared from homogenized grape pulp blended in different proportions of sugar were according to Amerine et al.,(1973) evaluated for Organoleptic qualities by a panel judges on a 9 point Hedonic scale. The mean values for scores for appearance, colour, taste, flavour, texture, mouth feel and overall acceptability (Guichard E., Etievant P. and Issanchous S. 1991).

Sample code	Sample Ratio	Appearance	Colour	Taste	Flavour	Texture	Mouth feel	Overall acceptability
Control	45:55	8.2	7.8	8	7.7	8.3	7.9	8.1
A	40:60	7.8	7.5	7.7	7.6	7.6	7.7	7.6
B	50:50	8.1	7.5	7.9	7.8	7.7	7.9	8.0
C	55:45	8.0	7.6	7.7	7.7	7.6	7.7	7.8
Mean		8.02	7.60	7.82	7.70	7.80	7.80	7.87

Table No.3 Organoleptic properties of jam

SUMMARY AND CONCLUSION

Grape (*Vitisvinifera*) is a delicious and important fruit crop that can be grown in tropical and subtropical regions. The area under its cultivation increasing day-by-day in India. The Grapes are rich in Carbohydrates and provide good amount of minerals like Phosphorus, Iron, Calcium. Grapes can be used as table grapes for consumption, for production of raisins and wines, Approximately 71% of world grape production is used for wines, 27% as a flesh fruit and 2% as a dry fruit. The jams were prepared using low TSS grape pulp and sugar in various proportions viz. 45:55, 40:60, 50:50, 55:45. The jams obtained were evaluated for chemical composition and Organoleptic properties.

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