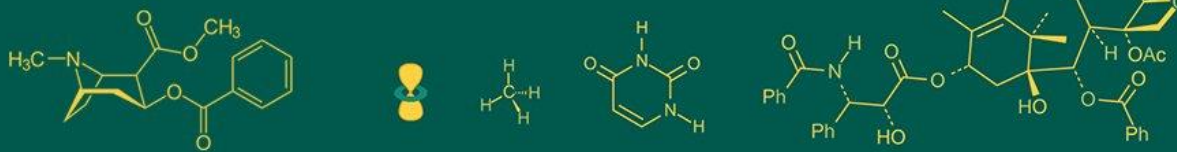


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Standardization of recipe of pineapple RTS flavoured with spices

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Abstract

The present investigation entitled “Standardization of recipe and storage behaviour of Pineapple RTS flavoured with spices” was conducted at Horticulture Processing Laboratory, Department of Fruit Science, College of Agriculture, IGKV, Raipur (C.G.) during the year 2023-24. The experiment was carried out in Completely Randomized Design with 15 treatments combinations and 3 replications. Among the different recipes tasted under investigation for preparation of pineapple RTS flavoured with spices T₁₁ (Pineapple Juice 10% + Ginger + Black Pepper + Cardamom) was found superior based on organoleptic evaluation. The results indicated that the sensory evaluation were affected by various treatments.

Keywords: Pineapple, RTS, Spice

Introduction

Fruits are essential in a healthy diet due to the immense health benefits. Fruit beverages such as RTS are becoming increasingly popular in comparison to synthetic drinks, evidently because of their taste, flavour and nutritive value. These are easily digestible, refreshing, thirst quencher, appetizer and superior to almost all kinds of aerated drinks, which have practically no food value. Spiced-based Pineapple Ready-to-Serve (RTS) juice offers a range of benefits that make it an appealing option for consumers. Firstly, the addition of spices enhances the flavour profile of the pineapple juice, providing a unique and intriguing taste experience. Moreover, these spices, such as ginger, black pepper, cardamom and nutmeg, and contribute their own health benefits. Ginger, for example, possess anti-inflammatory properties, while cardamom is known for its digestive benefits. By combining these spices with the natural goodness of pineapple, spiced-based RTS juice becomes not only a flavourful beverage but also a potentially functional one, offering antioxidant support, immune system reinforcement, and digestive aid. This unique blend of flavours and health-promoting properties can set spiced-based pineapple RTS apart in the market, appealing to consumers seeking both taste and wellness benefits in their beverage choices.

They provide vital vitamins, minerals, fibre and antioxidants that offer numerous health benefits. Pineapple belongs to the family Bromeliaceae, originated from the warm climates in Americas, being the main producers in Thailand, Brazil, Philippines, India and China. Pineapple juice's composition varies depending on geography, season, process and time of harvest. Its balance of sugar and acid contributes to the fruit's refreshing flavour. Pineapple is a wonderful tropical fruit having exceptional juiciness, vibrant tropical flavour and immense health benefits. Fruit beverages such as RTS are becoming increasingly popular in comparison to synthetic drinks, evidently because of their taste, flavour and nutritive value. These are easily digestible, refreshing, thirst quencher, appetizer and superior to almost all kinds of aerated drinks, which have practically no food value. Spiced-based Pineapple Ready-to-Serve (RTS) juice offers a range of benefits that make it an appealing option for consumers. Firstly, the addition of spices enhances the flavour profile of the pineapple juice, providing a unique and intriguing taste experience. Moreover, these spices, such as ginger, black pepper, cardamom and nutmeg, and contribute their own health benefits. Ginger, for

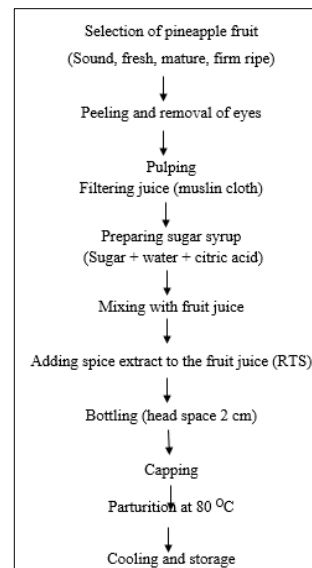
example, possess anti-inflammatory properties, while cardamom is known for its digestive benefits. By combining these spices with the natural goodness of pineapple, spiced-based RTS juice becomes not only a flavourful beverage but also a potentially functional one, offering antioxidant support, immune system reinforcement, and digestive aid. This unique blend of flavours and health-promoting properties can set spiced-based pineapple RTS apart in the market, appealing to consumers seeking both taste and wellness benefits in their beverage choices.

Materials and Methods

The present experiment was carried out in the year 2023-24 during winter at Horticulture processing lab, Department of Fruit Science, College of Agriculture, IGKV, Raipur (C.G).

Material required

Pineapple fruit, spices (Ginger, Black Pepper, Cardamom and nutmeg) Glass bottle of capacity 200 ml and metal caps for storing the beverages.



Flow chart of preparation of pineapple RTS flavoured with spices

Table 1: Details of treatments

S. No.	Treatment details	Notations used
1.	Pineapple Juice10%	T ₀
2.	Pineapple Juice10%+Ginger2%	T ₁
3.	Pineapple Juice10%+Black Pepper2%	T ₂
4.	Pineapple Juice10%+Cardamom2%	T ₃
5.	Pineapple Juice10%+Nutmeg 2%	T ₄
6.	Pineapple Juice10% +Ginger2%+BlackPepper2%	T ₅
7.	Pineapple Juice10%+Ginger2%+Cardamom 2%	T ₆
8.	Pineapple Juice10%+Ginger2%+Nutmeg 2%	T ₇
9.	Pineapple Juice10%+Black Pepper2%+Cardamom2%	T ₈
10.	Pineapple Juice10%+Black Pepper2%+Nutmeg 2%	T ₉
11.	PineappleJuice10% +Cardamom2%+Nutmeg2%	T ₁₀
12.	Pineapple Juice10%+Ginger2%+Black Pepper2%+ Cardamom 2%	T ₁₁
13.	Pineapple Juice10%+Ginger2%+Black Pepper2%+ Nutmeg 2%	T ₁₂
14.	Pineapple Juice10%+Ginger2%+Cardamom2%+ Nutmeg 2%	T ₁₃
15.	Pineapple Juice10%+Ginger2%+Black Pepper2%+ Cardamom 2% + Nutmeg 2%	T ₁₄

Results and Discussion

Organoleptic evaluation of freshly prepared Pineapple RTS flavoured with spices

The organoleptic evaluation of pineapple RTS flavoured with spices were recorded for the following variables *i.e.* colour and appearance, taste, aroma and overall acceptability, which has been presented in Table 02.

Colour and appearance

The present investigation, the maximum value of colour and appearance (9.01) was registered under the treatment (T₁₁) Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%, while the minimum value of colour and appearance (7.62) of Pineapple RTS flavoured with spices was recorded under T₀ (control) at 0 day of observation (time of preparation). The maximum value of colour and appearance recorded in the treatment T₁₁ (Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%) Might be due to the less non-enzymatic reaction of organic acid with sugar or oxidation of phenols, which leads to degradation of colour and appearance. Similar findings were noted by Nidhi *et al.* (2007)^[1] bael-guava RTS.

Taste

It is evident from the result obtained under the present trial the maximum taste score (9.03) was found under the

treatment (T₁₁) Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%, while the minimum taste score (7.58) of Pineapple RTS flavoured with spices was recorded under T₀ (control) at 0 day of observation. The maximum taste score recorded in the treatment T₁₁ (Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%). Might be due to the less non-enzymatic reaction of organic acid with sugar or oxidation of phenols, which leads to degradation of taste. The other possible reasons could be the less loss of volatile aromatic substances responsible for taste. The results of the present study are corroborated with the findings of Nath and Yadav (2002)^[2] in ginger-kinnow blended and Sonker *et al.* (2018)^[5] in pineapple RTS.

Aroma

It is apparent from the result obtained under the present trial that the maximum score for aroma (9.10) was registered under the treatment (T₁₁) Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%, while the minimum score for aroma (7.59) of Pineapple RTS flavoured with spices was recorded under T₀ (control) at 0 day after storage (time of preparation).

The maximum score for aroma might be due to the less non-enzymatic reaction of organic acid with sugar or oxidation of phenols, which leads to degradation of aroma. The other possible reasons could be the less loss of volatile aromatic

substances responsible for aroma. The present findings are in close agreements with the findings recorded by Mandal and Pathak (2005)^[3] in phalsa juice and Meena *et al.* (2017)^[4] in aonla juice.

Overall acceptability

As per the data shown in Table 4.3.1 revealed that the maximum value of overall acceptability score (9.03) was registered under the treatment (T₁₁) Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%, while the minimum value of overall acceptability score (7.52) of

Pineapple RTS flavoured with spices was enrolled under T₀ (control) at 0 day of storage (Time of preparation).

It might be due to the less nonenzymatic reaction of organic acid with sugar or oxidation of phenols which leads to degradation of overall acceptability. The other possible reasons could be the less loss of volatile aromatic substances responsible for overall acceptability. The results of the present investigation have been correspondent with the findings of Kumar *et al.* (2009)^[6] in aonla-pineapple nectar and Lalit *et al.* (2014)^[7] in guava nectar.

Table 2: Organoleptic analysis of spice flavoured pineapple RTS

Notations	Treatments	Colour and appearance	Taste	Aroma	Overall acceptability
T0	PineappleJuice10%	7.62 ^a	7.58 ^a	7.59 ^a	7.52 ^a
T1	PineappleJuice10%+Ginger2%	8.27 ^b	8.64 ^b	8.05 ^b	8.05 ^b
T2	PineappleJuice10%+BlackPepper2%	8.31 ^{bc}	8.69 ^c	8.08 ^{bc}	8.14 ^c
T3	PineappleJuice10%+Cardamom2%	8.34 ^{bcd}	8.65 ^b	8.14 ^d	8.16 ^{cd}
T4	PineappleJuice10%+Nutmeg 2%	8.37 ^{bcde}	8.73 ^{de}	8.15 ^d	8.21 ^e
T5	PineappleJuice10%+Ginger2%+Black Pepper2%	8.39 ^{bcde}	8.62 ^b	8.22 ^e	8.26 ^{fg}
T6	PineappleJuice10% +Ginger2%+Cardamom2%	8.40 ^{bcde}	8.76 ^c	8.25 ^{ef}	8.27 ^{fg}
T7	PineappleJuice10% +Ginger2%+Nutmeg2%	8.52 ^{cde}	8.81 ^f	8.29 ^{fg}	8.30 ^{gh}
T8	PineappleJuice10%+Black Pepper 2%+Cardamom2%	8.45 ^{bcde}	8.85 ^{gh}	8.31 ^g	8.34 ^{hi}
T9	PineappleJuice10%+Black Pepper 2%+Nutmeg 2%	8.41 ^{bcde}	8.70 ^{cd}	8.12 ^{cd}	8.19 ^{de}
T10	PineappleJuice10% +Cardamom2%+Nutmeg2%	8.43 ^{bcde}	8.82 ^g	8.26 ^{ef}	8.23 ^{ef}
T11	PineappleJuice10%+Ginger2%+Black Pepper2%+Cardamom 2%	9.01 ^f	9.03 ^j	9.10 ^j	9.03 ^l
T12	PineappleJuice10%+Ginger2%+Black Pepper2%+Nutmeg 2%	8.54 ^{de}	8.84 ^{fg}	8.33 ^{gh}	8.37 ^{ij}
T13	PineappleJuice10%+Ginger2%+Cardamom2%+Nutmeg 2%	8.56 ^e	8.86 ^h	8.36 ^h	8.39 ^j
T14	PineappleJuice10%+Ginger2%+BlackPepper2%+Cardamom 2% + Nutmeg 2%	8.98 ^f	8.94 ⁱ	8.93 ⁱ	8.97 ^k
	S.E(m) ±	0.08	0.02	0.01	0.03
	C.D.at5%	0.22	0.04	0.02	0.07

(1) The superscript letters signifies that the treatment means with similar letters are at par at 5% level of significance, while the means with different letters are significantly different at 5% level of significance. These letters have been affixed based on CD-value comparison of treatment means.

Conclusion

On the basis of research findings we may be concluded that “standardization of recipe of Pineapple RTS flavoured with spices” Based on the findings, the treatment T₁₁ (Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%) was best recipe with respect to chemical and organoleptic characters as it was preferred most by the panel. Thus, it can be concluded that treatment T₁₁ (Pineapple Juice 10% + Ginger 2% + Black Pepper 2% + Cardamom 2%) was preferred and can be marketed as commercial products.

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