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RESEARCH ARTICLE

EFFECT OF TURMERIC AND GINGER AS NATURAL ADDITIVES IN READY-TO-SERVE BEVERAGE

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ABSTRACT

The current study utilises turmeric as a natural preservative and colorant. Turmeric consists of three main components namely curcumin, demethoxy curcumin and bidemethoxy curcumin that are responsible for its bright yellow colour. Lemon strengthens the immune system and cleanses the stomach. Ginger maintains normal blood circulation, improves absorption, combats stomach discomfort and strengthens immunity. The objective of the current study was to study the effect of turmeric and ginger as natural additives in juice. Fresh lemons and ginger were commercially procured from a local store and washed thoroughly. Lemon juice was extracted and filtered using a muslin cloth. Ginger extract was prepared with water in the ratio 2:1 and filtered using a muslin cloth. The Control (C) was formulated using lemon juice (10%), water (80%) and sugar (10%). 0.15% of turmeric was the constant amount added to all the experimental trials, increasing which led to impalatability. Lemon ginger juice was formulated in three variations, with varying concentrations of ginger extract (V1-5%, V2-10% and V3-15%). The most acceptable variation was evaluated based on physicochemical, microbial and sensory characteristics. Sensory analysis revealed that V3 was more acceptable than V1 and V2. Physicochemical analysis of V3 revealed pH of 2.70 ± 0.02 and titratable acidity of $0.39 \pm 0.004\%$. Reducing sugars content was found to be 12.5% and total sugars content was $4.25 \pm 0.08\%$. The total soluble solids content was 1.3485°brix . It was noted that the colour of the variations was more appealing than the control. Microbial tests revealed that the microbial growth was lesser in V3 than control. The experimental had a shelf life of 25 days when kept at 4°C without the addition of any chemical preservatives. Thus, turmeric can be used as an efficient natural preservative in increasing the shelf life and as a natural colorant in ready to serve beverages.

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INTRODUCTION

This objective was to study the effect of ginger and turmeric as natural additives in a RTS beverage. The current study utilises turmeric as a natural preservative and colorant. Turmeric consists of three main components namely curcumin, demethoxy curcumin and bidemethoxy curcumin that are responsible for its bright yellow colour. Lemon strengthens the immune system and cleanses the stomach. Ginger maintains normal blood circulation, improves absorption, combats stomach discomfort and strengthens immunity.

MATERIALS AND METHODS

Procurement of the ingredients: All the ingredients such as ginger, lemon, turmeric, and sugar were procured from a local market in Chennai.

Preparation of Control: Standard lemon juice was observed to be the control for this study.

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The lemon extract, sugar and water were mixed together in the ratio 1:1:10. The control was formulated in three variations, with varying concentrations of ginger extract. The turmeric content was maintained as constant (0.15%) as it led to the impalatability of the product when the amount was increased. The composition of the 3 variations is given in the Table 1.

Table 1. Composition of variations

Variations	Ginger (%)	Lemon (%)	Sugar (%)	Water (%)	Turmeric (%)
V1	5%	10%	10%	75%	0.15%
V2	10%	10%	10%	70%	0.15%
V3	15%	10%	10%	65%	0.15%

Among these 3 variations, V3 was more acceptable based on its sensory characteristics. Thus physicochemical, microbial and sensory analysis was carried out using this variation.

Preparation of standard (Lemon ginger juice with turmeric)

Lemons and ginger were washed and cut. Lemon juice was extracted and filtered using a muslin cloth. Ginger extract was

prepared with water in the ratio 2:1 and filtered using a muslin cloth. The experimental contained 10% lemon, 15% ginger, 10% sugar and 0.15% of Turmeric.

Analytical procedure

The most acceptable variation (V3) was evaluated based on physicochemical, microbial and sensory characteristics. The experimental was subjected to physicochemical analysis such as pH, titratable acidity, reducing sugars & total sugars and total soluble solids. The physicochemical analyses were carried out using standard AOAC procedures. The sensory analysis for the experimental was carried out using a nine point hedonic scale. Thirty semi-trained panellists were selected to discriminate and scale the different attributes of the product on a broad range. The panellists were asked to evaluate each for colour, aroma, acidity, flavour, taste, after taste and overall acceptability on a 9- point hedonic scale (.9= like extremely and 1 = extremely dislike).

RESULTS AND DISCUSSIONS

- Pilot studies for sensory analysis was carried out to determine the variation which had the best sensorial acceptance. These revealed that v3 was more acceptable and thus the physicochemical, microbial and sensory analysis was carried for this variation only.
- Physicochemical analysis such as pH, titratable acidity, reducing sugars, total sugars and total soluble solids were carried out for the control and experimental. The pH of the control was found to be 2.1, whereas the pH of experimental was 2.7. The titratable acidity of the control was 2.4% whereas the experimental had a titratable acidity of 0.39%. The values are shown in Fig 1.

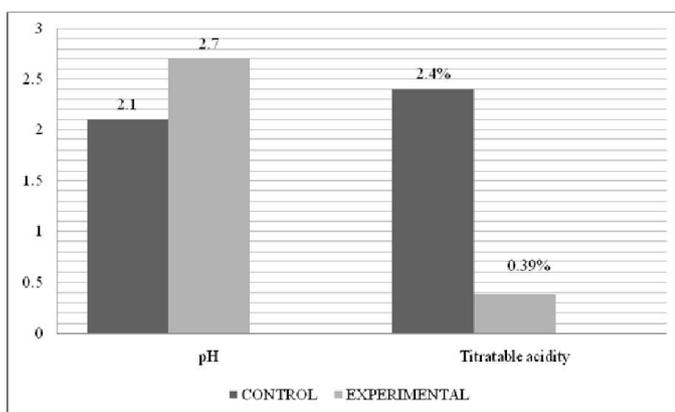


Figure 1. Physicochemical analysis of Control and Experimental

- Reducing sugar content of the experimental was found to be 12.5% and total sugar content was $4.25 \pm 0.08\%$. It was noted that the colour of the variations was more appealing than the control.

Shelf life study revealed that the experimental had a shelf life of 4 days when stored at room temperature (30°C) and had a shelf life of 25 days at 4°C.

- The sensory analysis for the experimental was carried out using a nine point hedonic scale. Thirty semi-trained panellists were selected to discriminate and scale the different attributes of the product on a broad range. The overall acceptability of the product was 7.3. The sensory scores for the experimental are shown in the graph(Fig. 2) below.

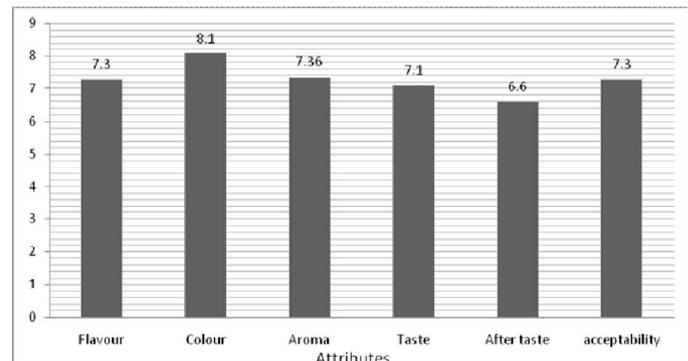


Figure 2. Sensory analysis of Experimental

Conclusion

- The experimental V3 had a shelf life of 25 days when kept at 4°C without the addition of any chemical preservatives.
- Sensory analysis for V3 revealed that the overall acceptability of the experimental was 7.3.
- The colour of the experimental was more appealing than the control. Thus, turmeric can be used as a natural colorant and as an efficient natural preservative in increasing the shelf life in ready to serve beverages.

REFERENCES

- Adesokan1, A., O. P. Abiola1 and M. O. Ogundiya, 2010. Influence of ginger on sensory properties and shelf-life of ogi, a Nigerian traditional fermented food, *African Journal of Biotechnology*, Vol. 9(12), pp. 1803-1808, 22 March.
- Dennis Emuejevoke Vwioko, Omorefosa Osarenkhoe Osemwegie* and Juliet Nneka Akawe, (31 August 2013), The effect of garlic and ginger phytonics on the shelf life and microbial contents of homemade soursop (*Annona muricata* L) fruit juice, *Biokemistri, An International Journal of the Nigerian Society for Experimental Biology*, Vol. 25 (2) 31–38
- Ekeledo, E. N., R. M. Omodamiro and E. Oti, 2013. Development and evaluation of turmeric: Ginger based pineapple drinks and food flavourings, *Pelagia Research Library Asian Journal of Plant Science and Research*, 3(3):139-141
