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Studies on value addition of apple cheese

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Abstract

The present investigation entitled "Studies on Value Addition of Apple cheese " was carried out in Post-Harvest Lab, Department of Horticulture, Sam Higginbottom University of Agriculture Technology and Sciences, during the winter season of the year 2016-2017. The experiment was laid out in CRD with 10 treatments and 3 replications for preparation of apple cheese. T₆ [Apple cheese + Lemon grass extract (0.75%)] proved to be the best in terms of TSS (81.90°Brix), ascorbic acid (mg/100g) (6.23), Acidity (1.08%), pH (3.11), reducing sugar (3.56%), none reducing sugar (6.40%) and total sugar (9.04%) then minimum in T₀ (control). Whereas T₆ [Apple cheese + Lemon grass extract (0.75%)] proved to be also best in terms of sensory score like Colour (7.14), flavor (7.22), taste (8.77), aroma (8.27), texture (8.37) and Over All Acceptability (8.21) then minimum in T₀ (control) of value addition of apple cheese at room temperature.

Keywords: Apple pulp, TSS, acidity, reducing sugar flavor, storage

Introduction

Apple is highly nutritive food. It contains minerals and vitamins in abundance. The food value of the apple is chiefly constituted by its contents of sugar which ranges from 9 to 11% of this, fruit sugar constitutes 60% and glucose 25% and cane sugar only 15% per 100gm of apple contains moisture 84% protein 0.2% Fat 0.5% Minerals 0.3% Fiber 1.0% carbohydrates 13.4% among mineral and vitamins it contains 10 mg of Ca, 14mg of phosphorus and 1 mg iron per 100gm of fruit 100 gm of apple gives calorific values of 59 Calories. Thus fruit are an important supplement of the human diet as they possess almost all the nutritive components required for the growth and development of the human body leading to a healthy physique and mind. Also these are a ready source of energy with a unique capacity to guard against many deficiency diseases.

Medicinal and aromatic herbs are used as food like basil and oregano in sauces, parsley as a garnish however herbs and plants not just to eat but to treat illness. World Health Organization estimates that 80% of the world's population uses some form of herbal medicine.

Ginger (*Zingiber officinale*) is spice which is used for cooking and is also consumed whole as a delicacy or medicine the characteristic odour and flavour of ginger root is caused by mixture of zingerone, shogaols, and gingerol, volatile oils that compose about one to three percent of weight of fresh ginger the ginger pungent taste of ginger is due non-volatile phenylpropanoid - derived compounds, particularly gingerols and shogaols ginger acts as a useful food preservative and has been proven to kill the harmful bacteria salmonella. (Ashari, 2007) ^[5]

Vana tulsi or, tulsi or Basil, also called holy basil sometimes (*Ocimum tenuiflorum* or *O. sanctum*) is an aromatic medicinal plant in Lamiaceae family which is native to Indian subcontinent and widespread as a cultivated plant throughout the Southeast Asian tropics. It is cultivated for religious and medicinal purposes, and for its essential oil. Tulsi extract are used in Aurvedic remedies for the variety of ailments. Traditionally tulsi is taken in many forms: as herbal tea dried powder, fresh leaf or mixed with ghee. Essential oil extract from karpooora tulsi is mostly used for medicinal purposes and in herb cosmetics.

Materials and Methods

The details of the various materials used and methods adopted in laid out the experiment are presented below-

Experimental Site

The experiment work of “Studies on Value Addition of Apple Cheese” conducted at the Horticulture processing lab of Sam Higginbottom University of Agriculture, Technology and Sciences, Allahabad (U.P.).

Recipe detail

Ingredient	Amount
Sugar	: 750 g/kg of pulp
Butter	: 90 g/kg of pulp
Citric acid	: 2g/kg of pulp
Value addition	: 0.25%, 0.50%, 0.75% (Ginger, Lemon grass and Vana tulsi) extract per kg apple pulp
Common Salt	: 2g/kg of pulp
Sugar	: 750 g/kg of pulp
Butter	: 90 g/kg of pulp
Citric acid	: 2g/kg of pulp
Value addition	: 0.25%, 0.50%, 0.75% (Ginger, Lemon grass and Vana tulsi) extract per kg apple pulp

Best quality of sugar was used and the percentage of sugar was kept same for all varieties besides their difference in inherent sugar concentration, 2.5g of common salt per kilogram of pulp were also added just before the end point.

Treatment detail

Notation	Treatment Combination
T ₀	Apple cheese (Control)
T ₁	Apple cheese + Ginger extract (0.25%)
T ₂	Apple cheese + Ginger extract (0.50%)
T ₃	Apple cheese + Ginger extract (0.75%)
T ₄	Apple cheese + Lemon grass extract (0.25%)
T ₅	Apple cheese + Lemon grass extract (0.50%)
T ₆	Apple cheese + Lemon grass extract (0.75%)
T ₇	Apple cheese + Vana Tulsi extract (0.25%)
T ₈	Apple cheese + Vana Tulsi extract (0.50%)
T ₉	Apple cheese + Vana Tulsi extract (0.75%)

Results and Discussion

Physico- chemical changes was noticed during storage period:

Perusal of table-1 and fig-1, Reveals the maximum total soluble solid (81.90%), TSS (81.90%), ascorbic acid (mg/100g) (6.23%), acidity (1.08%) and pH was (5.71%) was observed in T₆ [Apple cheese + Lemon grass extract (0.75%)] and minimum was observed in T₀ Control. The increase in acidity during the storage may be due to formation of organic acid by ascorbic acid degradation or the increase in acidity could have also occurred due to the hydrolysis of pectin are reported by Aggarwal and Michael (2014) [1]. Whereas the maximum reducing sugar (3.56%), non reducing sugar the (6.40%), total sugar (9.04%) was also observed in T₆ and minimum in T₀ (control).

Table 1: Effect of different treatments of value addition of apple cheese on physico- chemical changes during different storage period.

Treatments	TSS (° Brix)	ascorbic acid (mg/100g)	Acidity %	pH	reducing sugar (%age)	Non reducing sugar (%age)	total sugar (%age)
T ₀	63.58	3.75	0.62	5.71	2.89	4.40	7.41
T ₁	64.10	4.87	0.71	5.51	3.17	5.68	7.43
T ₂	79.30	5.33	1.04	3.54	3.25	4.74	7.67
T ₃	79.54	5.12	0.81	3.17	3.04	4.56	8.25
T ₄	79.59	5.34	0.98	3.49	2.98	5.99	8.63
T ₅	81.25	5.40	0.91	3.80	2.85	5.65	8.14
T ₆	81.90	6.23	1.08	3.11	3.56	6.40	9.04
T ₇	80.63	5.93	0.97	3.54	3.02	5.92	8.38
T ₈	79.10	6.13	0.94	3.52	2.90	5.68	8.36
T ₉	81.22	5.48	1.02	3.12	3.05	6.03	8.43
Mean	77.02	5.36	0.91	3.85	3.07	5.51	8.17
Result	S	S	S	S	S	S	S
S. Ed. (±)	0.900	0.018	0.005	0.033	0.003	0.011	0.011
C.D. at 5%	1.908	0.037	0.010	0.069	0.006	0.024	0.023

Fig 1: Effect of different treatments of value addition of apple cheese on physico- chemical changes during different storage period

Organoleptic evaluation was noticed during storage period

The maximum colour (7.14) Ehsan *et al* (2003) ^[3], flavour (7.22) Ali *et al.* (2008) ^[2], taste (8.77) Westerlund *et al.* (1991) ^[6], aroma (8.27) and overall acceptability, Singh *et al.* (2007)

^[5] observed in T₆ [Apple cheese + Lemon grass extract (0.75%)] and minimum in T₀ (control). However the organoleptic characters showed a gradual increase during the storage period up to 90 days.

Table 2: Effect of different treatments of value addition of Apple cheese on Organoleptic evaluation during different storage period.

Treatments	Colour	Flavour	Taste	Aroma	Texture	Over All Acceptability
T ₀	3.03	1.48	1.18	1.85	1.13	1.21
T ₁	3.95	3.00	2.04	2.11	1.88	1.58
T ₂	6.94	6.94	6.84	7.04	7.00	6.92
T ₃	6.72	6.97	6.64	6.72	7.48	6.82
T ₄	8.07	8.17	7.06	7.39	7.62	7.26
T ₅	7.82	7.92	8.17	8.07	8.16	8.06
T ₆	7.14	7.22	8.77	8.27	8.37	8.21
T ₇	7.03	7.03	6.86	6.95	6.90	6.93
T ₈	6.55	6.71	6.63	7.13	6.83	6.73
T ₉	6.58	6.53	6.53	6.86	6.99	6.66
Mean	6.38	6.20	6.07	6.24	6.24	6.04
Result	S	S	S	S	S	S
S. Ed. (±)	1.003	0.594	0.432	0.385	0.337	0.307
C.D. at 5%	2.126	1.259	0.916	0.815	0.714	0.651

Fig 2: Effect of different treatments of value addition of Apple cheese on Organoleptic evaluation during different storage period.

Conclusion

Value added apple cheese, mostly showed acceptable results. It was observed that control showed minimum loss in physiological weight of storage, minimum pH and higher TSS, high reducing, none reducing and total sugar percentage. T₆ [Apple cheese + Lemon grass extract (0.75%)] showed a higher ascorbic acid during the storage period. T have all the desirable qualities and having most overall acceptability throughout the storage period. The best value added product is T₆ [Apple cheese + Lemon grass extract (0.75%)] and T₄ [Apple cheese + Lemon grass extract (0.25%)] according to the physico-chemical properties and organoleptic evaluation.

Reference

1. Aggarwal P, Michael M. Effect of replacing sucrose with fructose on the physico chemical sensory characteristics of Kinnow candy. Czech J Food Sci. 2014; 32:158–163.
2. Ali M, Yasser D, Alam Z, Muhammad A, Javid U. Development of diet jam from apple grown in swat (nwfp) Sarhad J Agric. 2008; 24:224-229.

3. Ehsan EB, Naeem ZP, Javed A, Nazir A. Development, standardization and storage studies on grapefruit apple marmalade. Pak. J Food Sci. 2003; 13(3, 4):11-15.
4. Riaz MN, Mohyuddin G, Al Haq MI. Physical, chemical and sensory characteristics of jams made from fresh and frozen strawberries. Pakistan J Arid Agri. 1999; 2(1):51-60.
5. Singh R, Kapoor AC, Gupta OP. The effect of cultivars, seasons and storage on the nutritive value and keeping quality of Apple butter. Indian Food Packer. 2007, 71-77.
6. Westerlund PA, Anderson RE, Rehman SMM. Chemical characterization of water soluble pectin in papaya fruits. Carbohydr. Res. 1991; 15:67-78.