



ASSESSING THE ORGANOLEPTIC QUALITY OF STIRRED PAPAYA YOGHURT DURING STORAGE PERIOD

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ABSTRACT

The present study was conducted to develop stirred yoghurt by incorporating papaya fruit in order to improve the nutritional benefit of yoghurt using different inclusion level of papaya fruit (control - 0 %, T1 - 5.0%, T2 - 10%, T3 - 15% and T4 -20%). Samples were analysed for sensory quality during different storage period of zero, 7th, 14th and 21st day. Significantly higher values were observed in sensory evaluation in 10 per cent (T2) papaya incorporated yoghurt when compared with the other treatments. Hence, 10 % stirred papaya yoghurt was fixed and further study was carried out. From the above study, it is concluded that yoghurt can be incorporated with 10 % papaya fruit to enhance the nutritional quality without altering the sensory quality of yoghurt.

KEYWORD: Sensory quality - Stirred papaya yoghurt – Storage period.

INTRODUCTION

Yoghurt is a fermented milk product traditionally obtained by lactic acid fermentation through the action of lactic acid bacteria *Lactobacillus delbrueckii subsp. bulgaricus* and *Streptococcus salivarius subsp. thermophilus* (Orihara *et al.*, 1998). The nutritional value of yoghurt is made up of the nutrients of the milk and the nutrient among metabolites produced during the fermentation by lactic acid bacteria (Yukuchi *et al.*, 1992). There are many health benefits from yoghurt. Lactic acid aids in calcium absorption and digesting some of the lactose for people with lactose intolerance, Yoghurt also acts as an antibiotic, protects against gastrointestinal upset, decreases risk of cancer, lower blood cholesterol especially low density lipoprotein cholesterol and help the body to assimilate protein, calcium and iron. The organisms in yoghurt also can produce some B vitamins which are needed by the human body. Collectively, these contribute to a high level of nutrition and contribute to the strengthening of the immune system (Salwa *et al.*, 2004). Papaya fruit is known for its high nutritional and fibre content and it is generally consumed ripe due to its characteristics flavour and aroma. Moreover, it is characterized by high content of proteolytic enzyme papain as well as a similar enzyme

called chymopapain which may play an important role in food digestion (Starleya *et al.*, 1999). Considering all the above facts an attempt was made to develop stirred yoghurt by incorporating papaya fruit in order to improve the nutritional benefit of yoghurt.

MATERIALS & METHODS

Fresh cow milk obtained from the Dairy Farm, Veterinary College and Research Institute, Namakkal was used. Skim milk powder testing 5per cent moisture and 95% solubility was purchased from Aavin. Commercially available good quality cane sugar was used. Good quality papaya fruit purchased from local market in Namakkal.

Starter cultures

Freeze dried DVS cultures containing yoghurt bacteria *Lactobacillus delbrueckii sp. bulgaricus* and *Streptococcus salivarius ssp. thermophilus* obtained from Chr. Hansen, Denmark was used in this study.

METHODS

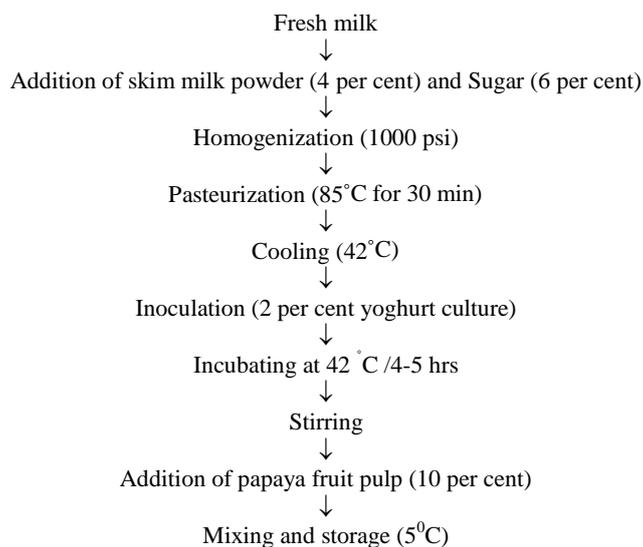
Preparation of fruit pulp

Fresh ripened fruit of papaya were purchased and after gentle wash under tap water, the fruits were subjected to pulp extraction.



Flow diagram of preparation of papaya stirred yoghurt

Organoleptic quality of stirred papaya yoghurt during storage period



Sensory evaluation of yoghurt

Sensory quality was carried out using 9-point hedonic scale with their preferences according to the scale (Amerine *et al.*, 1965).

Statistical analysis

The data obtained in all the experiments were analyzed statistically by applying one way and two ways ANOVA (Snedecor and Cochran, 1994).

RESULTS & DISCUSSION

Effect of Different Treatments of papaya on Sensory quality of yoghurt during storage period

The results pertaining to sensory qualities like colour and appearance, body and texture, flavour and overall acceptability of yoghurt by using 9 – point hedonic scale are presented in Table 1.

TABLE 1: Sensory quality of stirred papaya yoghurt (10 per cent) during different storage period

Treatments /Days	0 day	7 th day	14 th day	21 st day
Colour and appearance				
Control	8.11 ±0.004 ^d	7.70 ±0.41 ^c	6.65 ±0.021 ^{bB}	5.00 ±0.131 ^a
Stirred papaya (10 %) yoghurt	7.80 ±0.040 ^d	7.66 ±0.042 ^c	6.23 ±0.022 ^{bA}	5.10 ±0.127 ^a
Body and texture				
Control	8.25 ±0.003 ^{dB}	7.65 ±0.45 ^{cB}	7.32 ±0.042 ^{bB}	7.03 ±0.052 ^a
Stirred papaya (10 %) yoghurt	7.79 ±0.041 ^{dA}	7.51 ±0.045 ^{cA}	7.29 ±0.049 ^b	7.00 ±0.049 ^a
Flavour				
Control	8.05 ±0.003 ^{dB}	7.92 ±0.040 ^{cB}	7.36 ±0.036 ^{bB}	7.01 ±0.45 ^a
Stirred papaya (10 %) yoghurt	7.77 ±0.040 ^{dA}	7.52 ±0.038 ^{cA}	7.28 ±0.040 ^{bA}	7.00 ±0.046 ^a
Overall acceptability				
Control	8.06 ±0.003 ^{dB}	7.67 ±0.051 ^{cB}	5.92 ±0.12 ^{bB}	5.01 ±0.15 ^{aB}
Stirred papaya (10 %) yoghurt	7.78 ±0.048 ^{dA}	7.44 ±0.053 ^{cA}	5.83±0.11 ^{bA}	4.33 ±0.114 ^{aA}

Within a column, values with different superscript letters are significantly different (p<0.05)

Sensory quality of yoghurt during storage period

To find out the optimum level of incorporation of papaya for the improvement of nutritional and therapeutic properties of yoghurt and sensory evaluation was carried during storage period viz., 0 day, 7th day, 14th day and 21st day. In general the use of fruit homogenate for making stirred yoghurt caused improvement in body and texture properties of the final product. This improvement could be due to the higher content of fibers associated with fruit homogenate added and this may lead to increase the viscosity and consequently improve the body and texture. It is clear that panelist's preferred 10 per cent papaya stirred yoghurt compare to the other samples. So, addition of fruit to stirred yoghurt production may be contributed to increase the sensory quality of the final product. Erdogan and Zekai (2009) stated that, fruit additions have an increasing effect on yoghurt consumption. The sensory

scores of all the samples were decreased during storage period. This is may be due to the acidity development or the production of microbial metabolism which slightly harmed the textural and sensory properties of the product.

CONCLUSION

Yoghurt is a fermented milk product having several health benefits. The intake of yoghurt can improve lactose maldigestion, it lowers bad cholesterol and is also good for skin. Yoghurt having several health benefits so it is healthier for consumption. Different types of yoghurt are present and having different properties. By adding different fruits can also enhance the nutritional and sensory properties of the yoghurt. The above study also revealed that the papaya stirred yoghurt possessed a highest sensory and nutritional quality product. Among all

treatment the 10 per cent papaya stirred yoghurt preferred over other treatments.

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