

ABSTRACT

Alcoholic beverage derived from ripe banana

The quality properties of alcoholic beverages made from ripe banana were examined. Two banana types of the genus *Musa spp* were used that is long hand and short hand respectively, wine yeast (*Saccharomyces cerevisiae* var. *ellipsoideus*) and lactic acid bacteria isolated from yoghurt containing live and active cells of *Lactobacillus bulgaricus* and *Streptococcus thermophilus* were used as starter cultures. Distilled and mineral water were used respectively as extraction solvents. The extracted juices contained 15 °Brix, pH in the range of 4.2 to 4.6, TA ranged between 0.21- 0.3g/100ml. Part of The juices was inoculated with wine yeast and some other part with both wine yeast and LAB. Fermentation took about 7 to 10 days to be completed. pH decreased while titratable acidity (TA) increased with increasing fermentation time of the juice. Results revealed that the pH of long hand banana extract fermented with yeast was slightly higher than that of the short hand banana fermented with yeast that is 4.04 and 3.94 respectively. Similar results were observed for long and short hand banana fermented with both yeast and lactic acid bacteria 4.02 and 3.84 respectively. The TA of the long hand banana juices fermented with yeast and both yeast/LAB respectively were lower than that of the short hand banana juice fermented yeast and both yeast/LAB respectively. Fermentation took about 7 to 10 days to be complete and °brix reduced from 15 °Brix to 6 °Brix in all samples. The alcohol content of the various samples varied between 5.5%v/v and 6.5% v/v. Long hand banana had a much fruitier and better aroma than the short hand banana. The colors of the long hand banana extracts (light yellow) were more attractive compared to those of short hand banana (brownish yellow) at the end of the fermentation. Also, short hand banana fermented extracts looked more turbid. The aroma of the long hand banana fermented extracts were fruitier and sweeter compared to those of short hand banana fermented extracts. The sweet aromatic characteristic and light yellow color of the LHB fermented extracts, made us further our study using long hand banana. In the process of furthering this study, the various formulations were used **A: LHB/Distilled water/Yeast, B: LHB/mineral water/yeast, C: LHB/distilled water/yeast and LAB, D: LHB/mineral water/yeast and LAB.** Results revealed pH and specific gravity decreased while titratable acidity (TA) increased with increasing length of fermentation of the juice. A preference test revealed D is most preferred while sample C is least preferred. There was no significant difference between sample B and the rest $P > 0.05$, D was significantly different to A and C $P < 0.05$ also A and C were none significantly different $P > 0.05$. The pH of the distilled water extracts fermented with yeast (3.9 - 4) were slightly higher than those of the mineral water extracts fermented

with both yeast and LAB (3.68 - 3.7). TA of the extracts fermented with both yeast and Lab where slightly higher than those of the extracts fermented with only yeast. Fermentation was complete in about 7- 10 days and alcohol contents were: A: 6.4%v/v, B :5.9%v/v, C :6.3%v/v, D: 5.8%v/v the slightly low alcohol content of B and D might be due to the combined effect of both yeast and LAB. Overall the preference test ranked sample D: LHB/mineral water/yeast and LAB as most preferred of all (2.9 ± 1.12495^b). There was no difference in pH, TA and ⁰Brix of all the fermented extracts. An alcoholic beverage could be produced from banana using the recipe A to D. Overall there is no significant difference between the various products.

Abstract

Banana puree mixed yoghurt (Banana purero)

The quality properties of a food product made from ripe banana puree were examined. A mixture of banana puree and yoghurt, added with 20 % distilled water and heated at 90⁰ c was prepared and fermented by adding yeast and yeast/LAB respectively and stored for a week. A control was set where no microorganism was added. Physicochemical properties of yoghurt samples included pH, TA, texture, flavor, mouth feel. Sensory qualities were also determined. Results showed that acidity increases with time while pH decreased. Samples fermented with both yeast and LAB scored the highest TA 1.2g/100ml and a lowest pH 4.15. There was a significant difference in flavor and texture between mixtures fermented with microorganisms and the control $p < 0.05$. There is a significant difference in mouth feel between yeast fermented samples and the others $P < 0.05$. Sensory evaluation results showed that the sample fermented with both yeast and LAB was the most liked. Improvement of the most liked sample above by adding 40% of distilled water, mineral water and milk respectively. Results revealed no significant difference in color, flavor, texture and mouth feel of the various samples $p > 0.05$ and a preference test revealed samples added with mineral water to be the most preferred. Another improvement of the sample added with mineral water above by adding various concentration of sugar that is 0,2,4 and 6 % respectively revealed no significant difference in texture color and mouth feel $p > 0.05$ but a significant difference in sweetness and flavor between 6% and 0% sugars $p < 0.05$. The pH ranged between 4.04 and 4.12. The lowest pH 4.04 was for the sample added with 6% sugar and the highest pH 4.12 was for the sample in which no sugar was added. TA ranged between 1.03 and 1.5. The highest pH was for the sample in which no sugar was added and the lowest was for sample added with 6% sugar. The results showed that the higher the sugar concentration the lower the pH and TA. Banana puree mixed

with yoghurt, added with 40% mineral water and 6% sugar scored the highest overall acceptability. Comparing colors of the first product in which heat was applied to the improved ones revealed a dark brown color to a white brown color indicating that heating induces browning. The results of this current study demonstrate that banana puree can be used in combination of yoghurt, mineral water , sugar yeast and LAB to produce new food product and also that the addition of sugar and mineral water enhances flavor and overall acceptance of products

