

Fermentation of Sorrel Wines with Addition of Phenolic Compounds

Tamara Anderson

Project Supervisor: Dr. Neela Badrie

2006

Background: One of the health properties that are of particular interest is the antioxidant capacity of sorrel. This health benefit is also found in red grape wines. The compound that contributes to this is polyphenol. With the addition of polyphenols to sorrel wines, it is expected that the antioxidant property will be improved to the level of that of the red grape wine.

Objectives: The objectives of this study were to produce a sorrel wine by fermenting sorrel puree extracted from *Hibiscus sabdariffa* L. sorrel (roselle calyx), conduct a sensory evaluation of wine containing polyphenols as additives and study the effect of storage on the physicochemical and microbiological characteristics of wine.

Design: Sorrel calyces were hot-water processed at 90°C for 30 minutes and treated with 1.0% pectolase enzyme for sorrel puree. Dry wine yeast was used to ferment the sorrel puree to produce sorrel wine. The polyphenols at various levels (0, 50, 75 ppm) were added to the sorrel wine for the focus group. The highest rated sorrel wine with polyphenols was used in hedonic test. Physiological and microbiological tests were done at several stages.

Results: Sorrel wine with 25ppm of polyphenols was the highest sensory rated wine in focus group when compared to other levels (0, 50, 75ppm) of polyphenols. The added polyphenols had the effect of altering the mouth feel and astringency to an extent that it affects the consumer acceptance of the wine when compared to the control treatment, sorrel wine with no polyphenols added. The pure sorrel wine with no polyphenols added was well accepted. The sensory characteristics of 25ppm sorrel wine were stated to be very similar to sorrel wine with no polyphenols added, but the mouth feel had been altered slightly and there was a sense of astringency. The physiochemical and microbiological characteristics of sorrel wine after 6 weeks of storage at 24°C were altered due to the aging of the wine. The sorrel wine had the following characteristics; Colour properties: $L = 19.86 + 0.68$, $a = 1.98 + 0.13$, $b = 0.56 + 0.10$, chroma =

2.10 + 0.12 and hue = 16.93 + 3.09. The pH is 3.63 + 0.03. The °Brix is 6.30 + 0.48. TTA = 0.57% + 0.09 Citric Acid. The alcohol content is 12.9%. The clarity is 69.0 + 18.4 ntu.

Conclusion: Sorrel wine with polyphenols was accepted. The polyphenols could enhance the health properties of sorrel.