

Effect of Alcoholic and Acetous Fermentations on Phenolic Acids of Kei-Apple (*Dovyalis Caffra L.*) Fruit

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Abstract : Kei-apple is a tree found on the African continent. Limited information exists on the effect of alcoholic and acetous fermentation on the phytochemicals. The fruit has increased L-malic, ascorbic, and phenolic acids. Juice was co-inoculated with *Schizosaccharomyces pombe* and *Saccharomyces cerevisiae* to induce alcoholic fermentation and acetous fermentation using acetic acid bacteria. *Saccharomyces cerevisiae*+*S. pombe* wines and vinegars had highest pH. Total acidity, soluble solids and L-malic acid decreased during alcoholic and acetous fermentation with highest in *S. cerevisiae* wines and vinegars. Volatile acidity was highest in *S. pombe* vinegars but not different from *S. cerevisiae* and *S. cerevisiae*+*S. pombe*. Gallic acid was highest in *S. pombe* wines and vinegars. Syringic acid was highest in *S. cerevisiae* wines and vinegars. *S. cerevisiae*+*S. pombe* wines were highest in caffeic, p-coumaric and protocatechuic acids. *Schizosaccharomyces pombe* vinegars were highest in caffeic and p-coumaric acids. Ferulic and sinapic acids were highest in *S. pombe* and *S. cerevisiae* wines, respectively. Chlorogenic acid was most abundant in both wines and vinegars. *Saccharomyces cerevisiae*+*S. pombe* and *S. cerevisiae* had a positive effect on most phenolic acids. *Saccharomyces cerevisiae* +acetic acid bacteria had an increased effect on syringic and chlorogenic acids. *Schizosaccharomyces pombe*+acetic acid bacteria resulted in an increase in gallic, caffeic and p-coumaric acids. Acetic acid bacteria had minimal performance with respect to volatile acidity production in comparison to commercial vinegars. Acetic acid bacteria selection should therefore be reconsidered and the decrease of certain phenolic acids during acetous fermentation needs to be investigated.

Keywords : acetic acid bacteria, liquid chromatography, phenolics, *saccharomyces cerevisiae*, *schizosaccharomyces pombe*

Conference Title : ICFSNH 2021 : International Conference on Food Safety, Nutrition and Health

Conference Location : Tokyo, Japan

Conference Dates : June 10-11, 2021