ANTIOXIDANT ACTIVITIES OF THREE DIFFERENT GRAPE POMACES AND SEEDS AND SENSORY ANALYSIS OF GRAPE POMACE PATTY

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I. OBJECTIVES

Conversion of food wastes into value-added products can create a win-win-win situation for food waste reduction, value-added products, and additional income to product growers. The purpose of this research was to evaluate antioxidant activities of seed and seedless pomaces, generation of hamburger patties with grape pomaces, and sensory attributes of the grape patties.

II. MATERIALS AND METHODS

Three types of grape pomaces (Syrah, Merlot, and Cabernet Sauvignon) were obtained after red-wine production in the Center for Wine and Viticulture at California Polytechnic State University. The pomaces were divided into 2 portions (grape seed and seedless pomace) by manually separating seeds from the grape pomaces. Grape seeds were dried and pulverized, and seedless pomaces were freeze-dried to measure the relative ability of antioxidants using the ABTS (2,2′-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid) assay. Based on the results of antioxidation, 3 different hamburger patties were prepared using 0% (control), 2%, and 4% Merlot grape pomace. The patties were then evaluated for color (L^*, a^*, b^*) using a chromameter, cooking yield using the weight difference before/after cooking, and sensory attributes (flavor, texture, juiciness, color, taste, and overall) using a 50 sensory panel in the 9-point hedonic scale. Data in 3 replications were evaluated by one-way analysis of variance, using the PASW (Predictive Analytics SoftWare) (a pack of statistical analysis tools, formerly known as SPSS Statistics [SPSS Inc., Chicago, IL) 18 statistics program) and a completely randomized design. A post hoc analysis was performed using Duncan's multiple range test to evaluate difference among treatments at $P < 0.05$.

III. RESULTS

Results of the ABTS assay indicated that Merlot seed possessed the highest radical scavenging activity among the 3 types. A similar trend was observed in the seedless pomace although the activity was relatively lower than that of the seed. In color evaluation, pomace patties showed lower L^*, a^*, and b^* values than the control, regardless of addition amount. In sensory evaluation, lower sensory scores were generally observed in the patties having fermented grape pomaces compared with the control patties, regardless of pomace amount, except the juiciness and color in 2% pomace and the color in 4% pomace.

IV. CONCLUSION

Based on these results, addition of fermented-grape pomace may improve antioxidant activity and nutrition values but resulted in the loss of sensory attributes.