Effect of Production Methods on The Properties of Clear Beverages of Red Guava and Pineapple

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Background

- Clear fruit/tea beverages: with or without additional ingredients?
- Adopting extraction methods to make clear beverage?
- It is expected that health promoting components of fruit extracts can be dissolved into water without involving number of solid particles.

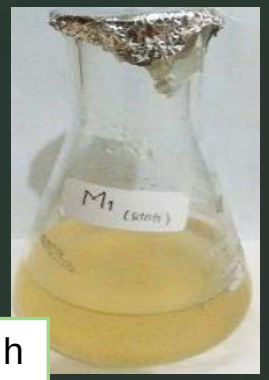
Aim

to study the effect of several methods [i.e. maceration, boiling, steaming-condensing, and vacuum heating] on the yield, turbidity, ascorbic acid, and antioxidant activity of clear drinks from red guava and pineapple.

Materials & Methods

Lyophilized red guava & pineapple powders in aquadest (1:25)

(1) Maceration



Shaking 200 rpm 1 h + 24 h

Filtering (Whatman 91)

(2) Heating

70°C 15 min

(3) Vacuum heating

Oven-vacuum
50°C 15 min

(4) Steaming-Condensation

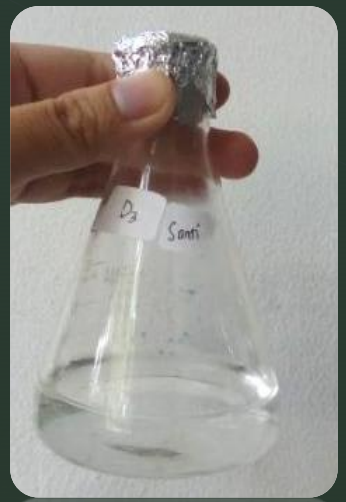
1 hour

Results and Discussion

Macerated

Heated

Vacuum-heated



Steam-condensed

Results & Discussion

Yield (%)

Treatment	Red Guava	Pineapple
Maceration	76.0 ± 0.8^{1}	84.3 ± 1.2^{b}
Heating	73.9 ± 0.5^{2}	88.8 ± 0.8^{a}
Vacuum Heating	72.0 ± 0.8^{3}	86.9 ± 1.2^{ab}
Steam-Condens	25.9 ± 1.8^{4}	37.2 ± 1.6^{c}

Results & Discussion

Turbidity (NTU)

Treatment	Red Guava	Pineapple
Maceration	220.9 ± 2.9^{1}	94.7 ± 0.3^{a}
Heating	165.7 ± 10.4^{2}	*17.7 ± 0.1^{c}*
Vacuum Heating	89.6 ± 5.3^{3}	57.9 ± 1.9^{b}
Steam-Condens	**9.1 ± 0.04^{4}**	**2.4 ± 0.2^{d}**

[commercial one: 1.74 ± 0.03 NTU]

Results & Discussion

Ascorbic acid (mg/100 mL)

Treatment	Red Guava	Pineapple
Fresh	587.4 ± 11.4 (mg/100g)	469.0 ± 0.0 (mg/100g)
Lyophilized	576.6 ± 45.9 (mg/100g)	392.6 ± 0.1 (mg/100g)
Maceration	12.6 ± 0.3^{1}	13.3 ± 1.4^{b}
Heating	30.8 ± 0.9^{2}	14.3 ± 2.1^{b}
Vacuum Heating	27.8 ± 0.5^{3}	17.8 ± 0.2^{a}
Steam-condens	*ND	*ND

[commercial one: 1.35 ± 0.01 mg/100 mL]

Results & Discussion

Antioxidant activity (%)

Treatment	Red Guava	Pineapple
Fresh	368.4 ± 14.6	105.9 ± 0.1
Lyophilized	98.0 ± 0.7	34.2 ± 0.0
Maceration	18.6 ± 0.2^{1}	8.1 ± 0.4^{c}
Heating	28.4 ± 0.4^{2}	11.5 ± 0.6^{a}
Vacuum Heating	25.0 ± 1.4^{3}	10.6 ± 0.3^{b}
Steam-condens	1.2 ± 0.1^{4}	0.3 ± 0.3^{d}

[commercial one: 1.45 ± 0.03 %]

Conclusion

Steaming followed by condensation produces red guava and pineapple drinks that having the clearest appearance among other three methods but the lowest levels of ascorbic acid and antioxidant activity.

There are significant difference of quality attributes between the products from pineapple and from red guava.

Thank you