

## Use of the by-product of fruit pulp processing in the development of fruit leather

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### Abstract

In the fruit pulp market, the manufacturing industries generate large amounts of solid waste, which are often discarded. Because of this, there is interest in finding products that use the waste as raw material. One way to add value to this waste, since they can still be rich in interesting compounds, is their use in other products destined for human consumption such as fruit leather. This study was conducted to develop fruit leathers from the by-product of the fruit pulp processing industries of three native fruits from the Brazilian Atlantic Forest: grumixama, uvaia and cambuci. Seven formulations were produced from each fruit. They were evaluated through physical-chemical analysis and chemical composition, including pH, total acidity, brix, humidity, water activity, reducing sugars, color, texture and content of total phenolic compounds. The products were sensory evaluated by a test of acceptability conducted with 120 potential consumers. Whereby we could see that the most accepted formulations were: grumixama, pulp and fine dry by-product; uvaia, pulp, pulp + dry by-product (higher mesh) and pulp + fine dry by-product; and cambuci, pulp.

*Key words: fruit leather, fruit by-product, native fruits*

### Introduction

The processing of fruit pulp generates large amounts of solid waste that are, in the major part of the cases, just simply disposed in land fields. However, they can still contain compounds of great interest for human consumption, such as bioactive compounds. Thus, there is a recent attempt of use these wastes as raw material for other food industry products. This project aimed to develop fruit leather using native fruits of the Atlantic Forest as raw material, including frozen pulp, wet waste and dry waste and evaluate them, both sensory and physic-chemically, with some approach to bioactive compounds.

### Results and Discussion

Seven formulations of each fruit were developed with the following composition: (1) pulp; (2) pulp + wet by-product; (3) wet by-product; (4) pulp + dry by-product (higher mesh); (5) dry by-product (higher mesh); (6) pulp + fine dry by-product; (7) fine dry by-product. The higher mesh dry by-product has particle size between 1.68 and 1,19mm; fine dry by-product, less than 0.25 mm. Consumer's sensory tests of acceptability using a 9-point hedonic scale were carried out on these fruit leathers, and from the results of analysis, considering the overall impression, it was revealed that the formulations most accepted for each fruit were (statistically equal,  $p < 0.05$ ):

- A) Grumixama: formulations 1 (5.9) and 7 (5.6).
- B) Uvaia: formulations 1 (6.9), 4 (6.9) and 6 (6.8).
- C) Cambuci: formulation 1 (7.2).

The results obtained for total phenolic compounds are shown below <sup>(1)</sup>:

- A) Grumixama: the results range was from 3.00 to 17.83 mg gallic acid / g leather.
- B) Uvaia: the results range was from 0.87 to 3.73 mg gallic acid / g leather.
- C) Cambuci: the results range was from 2.61 to 7.69 mg gallic acid / g leather.

For all fruits, the lowest values correspond to the formulation made with only pulp and the highest to the formulation made from higher mesh dry by-product.

### Conclusions

Based on this work, it was possible to note that the production of fruit leathers from grumixama, uvaia and cambuci by-products and pulp is technologically feasible.

In addition, some of the formulations had good acceptance by potential consumers and had important total phenolic compounds results, which can give the product a functional appeal.

### Acknowledgement

To Cnpq for granting undergraduate research scholarship. To Bello's Farm, CpKelco, Cargill and Ingredion for donating the ingredients. To the technician and lab colleagues for the collaboration.

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