

TITLE: GOURMET BLUEBERRY AND HONEY VINEGAR: PRODUCTION AND CHARACTERIZATION

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ABSTRACT:

Vinegar is a traditional culinary condiment produced by acetic acid fermentation. Different raw materials such as alcohols and alcoholic fermented beverages derived from fruits, vegetables, cereals and honey can be used in the acetification process. Fruit vinegars stand out in relation to alcohol vinegars due to sensorial and nutritional quality aspects, as the product maintains functional characteristics of the raw material. The objective of the present work was the production and characterization of a *gourmet* vinegar from blueberry and bee honey using an artisanal process. Initially, alcoholic fermentation was carried out in a bench-scale bioreactor at 28 °C and using a pure culture of *Saccharomyces cerevisiae* r.f. *bayanus* as inoculum, and a must based on blueberry pulp and bee honey (*Apis mellifera*). The wine made of blueberry and honey was, in turn, employed as the raw material in the acetification process to make vinegar. Acetic fermentation was carried out at 28 °C in a Grapia wooden barrel, using 1.360 mL of wine and 140 mL of inoculum. The inoculum used was a culture of acetic acid bacteria isolated from Colonial Red Grape vinegar acquired in the southwestern region of Paraná, Brazil. The vinegar obtained was centrifuged (1,600 x g/30 min) and stored in amber bottles for further characterization. Physico-chemical parameters assessed included pH, reducing sugars content, acetic acid and ethanol concentration by HPLC. The concentrations of phenolic compounds, total anthocyanins and antioxidant activity were also evaluated. The acetic acid and ethanol contents found in the vinegar produced were 4.2 g/100 mL and 0.02 g/L, respectively, and these values are in accordance with Brazilian Legislation. Relatively high total reducing sugars by fenol sulfuric content (8.34 g/L) was found, which may contribute to the flavor of the product. The vinegar presented high concentrations of polyphenolic compounds (687.43 mg Gallic Acid Equivalent/mL), anthocyanins (13.32 mg cyanidin-3-glycoside/mL), and appreciable antioxidant activity assessed against DPPH (171 µmol trolox equivalent/mL), ABTS (122,790 µmol trolox equivalent/mL) and FRAP (203.49 mM FeSO₄/mL) was also verified. Based upon the findings of this study, the production of *gourmet* vinegars of blueberry with honey by artisanal processes could be an attractive option for adding value and strengthening the production chains of blueberry and bee honey on small farms in southern Brazil.

Keywords: blueberry, acetic oxidation, functional food, antioxidant capacity.

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