

# NUTRITIONAL AND FUNCTIONAL PROPERTIES OF FREEZE-DRIED FRUITS OF TWO PHILIPPINE BIGNAY (*ANTIDESMA BUNIUS* (L.) SPRENG) CULTIVARS

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## ABSTRACT

Bignay (*Antidesma bunius* (L.) Spreng) is an indigenous wild berry in the Philippines, with two cultivars namely Bignay-Common and Bignay-Kalabaw. Traditionally, it has been used as a medicinal plant and was recently studied for its pharmacological properties. Several of the chemical constituents of these Bignay cultivars, however, are yet to be studied. Therefore, the objective of this study was to determine the vitamins, minerals, and phytochemicals present in Bignay-Common and Bignay-Kalabaw. Using HPLC analysis, Bignay-Kalabaw was observed to have higher vitamin A and E contents at 129 IU and  $2.909 \pm 0.093$  mg/100 g freeze-dried fruit, respectively, than Bignay-Common with vitamin A content of 28 IU and vitamin E content of  $1.772 \pm 0.017$  mg/100 g freeze-dried fruit. On the other hand, Bignay-Common was higher in terms of vitamin C content with  $25.996 \pm 0.688$  mg/100 g compared to Bignay-Kalabaw with  $23.306 \pm 1.421$  mg/100 g freeze-dried fruit. Mineral analysis using ICP-OES revealed that Bignay-Kalabaw had more minerals in higher amounts than Bignay-Common. Notable differences were observed for the 'Kalabaw' and 'Common' cultivars in terms of its calcium ( $203.665 \pm 1.770$  mg &  $170.117 \pm 0.766$  mg/100 g sample, respectively), copper ( $2.806 \pm 0.015$  mg &  $1.834 \pm 0.007$  mg/100g sample, respectively), and manganese ( $2.687 \pm 0.020$  mg &  $1.636 \pm 0.003$  mg/100g sample, respectively) content. Conversely, Bignay-Common had significantly higher iron content at  $6.653 \pm 0.011$  mg than Bignay-Kalabaw at  $3.853 \pm 0.025$  mg/100 g freeze-dried fruit. Qualitative screening using methanolic extracts revealed that both cultivars possessed 9 of the 14 phytochemicals tested, namely tannins, saponins, flavonoids, quinones, terpenoids, phenols, coumarins, steroids, and phlobatannins. The findings indicate that the Bignay cultivars contain health-promoting compounds which have the potential to be developed into food supplements.

Keywords: bignay, *Antidesma*, vitamins, minerals, phytochemicals

## 1. INTRODUCTION

The increasing prevalence of non-communicable diseases (NCDs) worldwide has prompted researchers to delve into the use of bioactive compounds naturally occurring in plant foods to combat NCDs such as obesity and diabetes mellitus. Berries have previously exhibited antioxidant properties which make them good candidates for development as functional food ingredients and food supplements. In the Philippines, indigenous berries remain underutilized