

Antioxidant Capacity of Phenolic Compounds from Selected Peruvian Andean Fruits: Potencial Applications in the Food Industry

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Abstract:

Oxidative stress related to chronic metabolic diseases and certain types of cancer can be prevented by consuming antioxidants that mitigate cellular damage caused by free radicals as a result of cellular metabolism or as a consequence of external factors such as lifestyle. The study evaluated the antioxidant activity and the content of phenolic compounds in extracts of native fruits selected at ranges of 2500 to 4000 above sea level from the Jalca Ecoregion in the northern Andes of Peru. The species studied were *Berberis saxicola* Lechler, *Gaultheria glomerata* Sleumer, *Salpichroa sanmiguelina* S.Leiva and *Vaccinium floribundum* Kunt. A factorial experimental design was applied, using temperature (20, 30 and 40°C) and pH (4, 5 and 6) during the extraction of bioactive compounds. Folin-Ciocalteu and DPPH methods were used to determine total phenol content and antioxidant capacity. The results revealed that the temperature of 40°C and pH 6 significantly optimize the extraction of phenolic compounds. *Berberis saxicola* stood out with the highest total phenol content (1648.75±2.5 mgGAE/100g) and antioxidant capacity (1867.62 mgAA/100). The study determined that temperature, pH, extraction time and solvent ratio are critical variables for extraction of bioactive compounds with promising implications for future applications in the food and pharmaceutical sectors.

Key words: *Berberis saxicola* Lechler, *Salpichroa sanmiguelina*, *Gaultheria glomerata*, *Vaccinium floribundum*, Antioxidant capacity, Total phenols.

Citation: To be added by editorial staff during production.

Academic Editor: Firstname Last-name

Received: date

Revised: date

Accepted: date

Published: date



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1. Introduction

Oxidative stress is associated with the development of several metabolic disorders, chronic diseases or cancers (Aminjan et al., 2019; Dos Santos et al., 2020; Reddy, 2023; Sharifi et al., 2020; Zhang, 2023). Currently, oxidative stress (OS) is one of the causes of mortality with the greatest health impact worldwide (Reddy., 2023; Sharifi et al., 2020; Zhang., 2023).

Antioxidants are substances that prevent the formation of free radicals, scavenge, neutralize or repair free radical damage. Protection against oxidative damage and chronic diseases is achieved through a variety of endogenous and exogenous antioxidants.(Reddy, 2023; Sharifi et al., 2020).