ISSN(Print) : 1738-7248, ISSN(Online) : 2287-7428
Korean J. Food Preserv.
28(6), 705-715 (2021)
https://doi.org/10.11002/kjfp.2021.28.6.705

사단법인 한국식품저장유통학회
The Korean Society of Food Preservation

Physicochemical characteristics and antioxidant activities of laver cultivars harvested at different times

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김의 품종 및 채취시기별 성분 및 항산화 특성

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Abstract

The aim of this study was to compare the physicochemical characteristics and antioxidant activities of *Pyropia dentata* harvested in November (PD11), *Pyropia seriata* harvested in December (PS12), and *Pyropia yezoensis* harvested in December (PY12), January (PY01), or March (PY03). Total amino acid content (mg/100 g dry wt.) was high: PY01 (41,009.52) > PY12 (40,914.26) > PS12 (35,720.29) > PD11 (33,762.75) > PY03 (32,906.54). The major minerals within the three laver cultivars were Ca, K, Mg, and Na. PD11 exhibited the highest contents of shinorine (2,089.84 mg/ 100 g dry wt.) and porphyra-334 (3,127.96 mg/100 g dry wt.), which are mycosporine-like amino acids. Of the PY samples harvested at different times, PY03 exhibited the highest contents of shinorine (19.00 mg/100 g dry wt.) and porphyra-334 (438.31 mg/100 g dry wt.). The total phenol content was higher in PD11 (702.99 mg tannic acid equivalent/100 g) than those in the other samples. PD11 had the highest 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid radical-scavenging and ferric reducing antioxidant activities. The results provide basic information regarding the physicochemical characteristics and antioxidant activities of laver cultivars harvested at different times.

Keywords : laver, *Pyropia yezoensis*, *Pyropia seriata*, *Pyropia dentata*, antioxidant activity

Introduction

Laver (*Pyropia* spp.) is the most popular marine red algae that is widely consumed in Korea, along with *Unaria pinnatifida* and *Saccharina japonica*. Laver has been described as “sea clothes” in Gyeongsangdo Jiriji (1424-1425), and cultivated since the late 1400s (Bae et al., 1991). In South Korea, laver is generally cultivated in the Southwestern coastal areas in the winter from November to March, and approximately 610,000 tons of laver are produced in 2019, which costs about 560 billion KRW. The main varieties of laver produced in Korea are *Pyropia tenera*, *Pyropia yezoensis*, *Pyropia seriata*, and *Pyropia dentata* (Lee et al., 2017). Raw laver is used in soups, salads, and braised dishes or processed as several food products such as dried laver, roasted laver, laver snacks, and seasoned laver to be consumed as side dishes or snacks (Lee et al., 1987).

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Received 14 June 2021; Revised 29 July 2021; Accepted 09 August 2021.