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Analysis of Pigment Composition of Brown Seaweeds Collected from Panjang Island, Central Java, Indonesia

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Composition of pigments from four species of brown seaweeds (Phaeophyceae) collected from Panjang Island, Central Java, Indonesia, was investigated with spectroscopic method and reverse-phase high-performance liquid chromatography (RP-HPLC). Identification of pigments was based on their spectral and chromatographic properties and also confirmed by electrospray ionization-mass spectrometry (ESI-MS/MS) analysis. The experimental results showed that concentrations of chlorophyll *a* (Chl *a*) and total carotenoids (Cars) from brown seaweeds, estimated by spectroscopic method, varied depending on species from 1.73 mg · g⁻¹ to 8.84 mg · g⁻¹ and from 0.55 mg · g⁻¹ to 4.06 mg · g⁻¹ dry weight (dw), respectively. In addition, the order of concentrations of Chl *a* and total Cars in four species of seaweed was as follows: *Dicyota dentata* > *Padina australis* > *Sargassum crassifolium* > *Tharbinaria confinis*. This order was in agreement with the concentrations of dominant pigments calculated by HPLC method, i.e., fucoxanthin (Fuco) (0.43 mg · g⁻¹ to 4.11 mg · g⁻¹ dw), Chl *a* (1.70 mg · g⁻¹ to 7.89 mg · g⁻¹ dw), β-carotene (0.16 mg · g⁻¹ to 0.78 mg · g⁻¹ dw). These results suggest that *D. dentata* is likely potential source material to explore the industrial utilization, especially functional food and biomedical ingredients, of Fuco and Chl *a*.

Key words: brown seaweed, chlorophyll *a*, ESI-MS/MS, fucoxanthin, Panjang Island, pigment composition

INTRODUCTION
Indonesia is well known as an archipelago country having abundant marine natural resources. One of them is seaweeds which are classified based on their pigmentation into brown, red and green seaweeds (Dawczynski et al. 2007).

Brown seaweeds (Phaeophyceae) have not been optimally explored, although they have been recognized to have several beneficial effects on human health. In addition to sodium alginate, fucoxanthin (Fuco), the major marine carotenoid (Car), is a commercial importance in brown seaweeds. Fuco has demonstrated anti-inflammatory (Shiratori et al. 2005), anticancer (Kotake-Nara et al. 2001), and anti-obesity (Miyashita 2009) activities.

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