Antioxidant activity of Cymodocea rotundata from various habitats

ABSTRACT

Cymodocea rotundata Ehrenb. & Hempr. ex Aschers. (Family: Cymodoceacea) is a flowering plant which inhabit Malaysian coastal waters. The seagrass is of ecological importance which forms dense meadow supporting high biodiversity and food to a variety of aquatic organisms. The species can adapt to certain level of anthropogenic disturbances, and thus is an important bio-indicator to examine the marine health condition. The aim of the present study is to determine the antioxidant activity of C. rotundata from several seagrass beds, and their relationship between morphometric and water quality characteristics. The seagrass was collected from 6 sites; (1) Teluk Pelanduk, Negeri Sembilan, (2) Pantai Punang-Sari-Lawas, Sarawak, (3) Pantai Sungai Bangat, Sarawak, (4) Teluk Sepanggar, Sabah, (5) Pantai Kampung Kelawat, Sabah and (6) Pulau Mabul, Sabah. Morphometric measurement of leaf blade length and blade width was taken from dry herbarium of the seagrass. Water samples were analyzed for ammonia, nitrate and nitrite. Seagrass methanol leaf extracts were evaluated for antioxidant activity including total phenolic content (TPC), total flavonoid content (TFC), DPPH and FRAP activities. This present study showed that C. rotundata leaf blade length was strongly correlated with nitrate (r=0.82) and inversely correlated with DPPHactivity (r=-0.97). Long-leaved C. rotundata (13.6±2.3 cm) from Teluk Pelanduk (S1) possessed a very strong antioxidant DPPH EC50 (41.58±7.87 µg/mL). This suggests that the leaf morphometric of C. rotundata can be used as references for monitoring the water quality and antioxidant status of the seagrass.

Keyword: Antioxidant; Cymodocea rotundata; Seagrass; Morphometric