

Antioxidant Activity of Extracts of Halodule pinifolia

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Antioxidant Activity of Extracts of *Halodule pinifolia* Seagrass from Solvents with Different Polarities

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ABSTRACT

The purpose of this study was to analyze phytochemistry contents and antioxidant activity of extracts from seagrass of *Halodule pinifolia* from solvents with different polarities. Parameters of research were phytochemical content, DPPH scavenging activity and reducing power. The result showed content of phytochemical compounds of ethanol extract seagrass were flavonoids, tannins, saponins, sterioids and triterpenoids. The use of ethyl acetate solvent showed phytochemical compounds were flavonoids, steroids and triterpenoids. For n-hexane solvent showed phytochemical compounds were steroids and triterpenoids. The highest of antioxidant activity with DPPH method (IC_{50}) of *H. pinifolia* was 18.7 ppm with ethanol extract. The highest of reducing power of *H. pinifolia* was 1.749.

Keywords: Seagrass, *Halodule pinifolia*, antioxidant.

INTRODUCTION

Seagrasses are flowering plants (angiosperms) which grow in marine, fully saline environments. Seagrasses are a rich source of structurally novel and biologically active metabolites which they produce in order to sustain the extreme environmental conditions prevailing under sea¹

Seagrasses produce antioxidant compounds that inhibits the oxidation of other molecules and there are many reports describing antioxidant activities²⁻⁵, antifungal⁶, antiviral⁷, anti-inflammatory⁸, antidiabetic⁹ and antibacterial¹⁰⁻¹².

However reports on the phytochemical constituents of seagrasses and their bioactive activity of Indonesian sea are limited with the exception of few studies in this research^{13,14}, we reported that antioxidant activity of extracts of *Halodule pinifolia* seagrass from solvents with different polarities.

MATERIALS AND METHOD

Preparation of Seagrass extract

⁷ Extraction of *Halodule pinifolia* seagrass by stratified maceration method using n-hexane, ethyl acetate and ethanol. Sea grass powder were soaked in 2 L with solvent (1:4 w/v), and kept for 2

x 24 h in a shaker. The solution is filtered using the number 42 Whatman filter paper to obtain the filtrate. The filtrate is dried using a freeze dryer to remove the solvent that may remain in the extract

Phytochemical Screening of *Halodule pinifolia*

Test of flavonoids, alkaloids, saponin, steroids, triterpenoids were determined by Harborne method¹⁵.

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DPPH radical scavenging activity

DPPH radical scavenging activity was measured based on methods described in Hanani *et al.*¹⁶.

Reducing power

Reducing power was determined by Oyaiza method¹⁷.

RESULT AND DISCUSSION

The phytochemical screening

As seen as Table 1 showed content of phytochemical compounds of extract of seagrass were flavonoids, alkaloids, tannins, saponins, steroids and triterpenoids.

The result showed content of phytochemical compounds of ethanol extract seagrass were flavonoids, tannins, saponins, steroids and triterpenoids. The use of ethyl acetate solvent showed the phytochemical compounds were flavonoids, steroids and triterpenoids. For n-hexane solvent showed phytochemical compounds were steroids and triterpenoids.

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DPPH radical scavenging activity

Method of DPPH radical scavenging activity is very popular for the research of natural

Table 1: Phytochemical compound of extract of *H. pinifolia* seagrass

Sample	Parameter	Result	
n-hexane	Flavonoids	Negative	
	Alkaloids	Wegner	Negative
		Mayer	Negative
		Dragendorf	Negative
	Tannins	Negative	
	Saponins	Negative	
	Steroids	Positive	
	Triterpenoids	Positive	
	Ethyl acetate	Flavonoids	Positive
		Alkaloids	Wegner
Mayer			Negative
Dragendorf			Negative
Tannins		Positive	
Saponins		Negative	
Steroids		Positive	
Triterpenoids		Positive	
Ethanol		Flavonoids	Positive
		Alkaloids	Wegner
	Mayer		Negative
	Dragendorf		Negative
	Tannins	Positive	
	Saponins	Positive	
	Steroids	Positive	
	Triterpenoids	Positive	

antioxidants¹⁸. The extraction with solvents of increasing polarity involves of separating compounds 3 a plant according to their degree of solubility. DPPH radical scavenging activity of hexane, ethyl acetate and ethanol extracts obtained of the *Halodule 4 pinifolia* were shown in Figure 1. The maximum DPPH radical scavenging activity was

recorded in ethanol extracts followed by ethyl acetate and n-hexane.

The IC 50 of extract was 18.7 ppm for ethanol extract, 696.2 ppm for ethyl acetate extract and 2,378.2 ppm for n-hexane extract. The IC 50 value for vitamin C was 7.7 ppm (Figure 2). The results

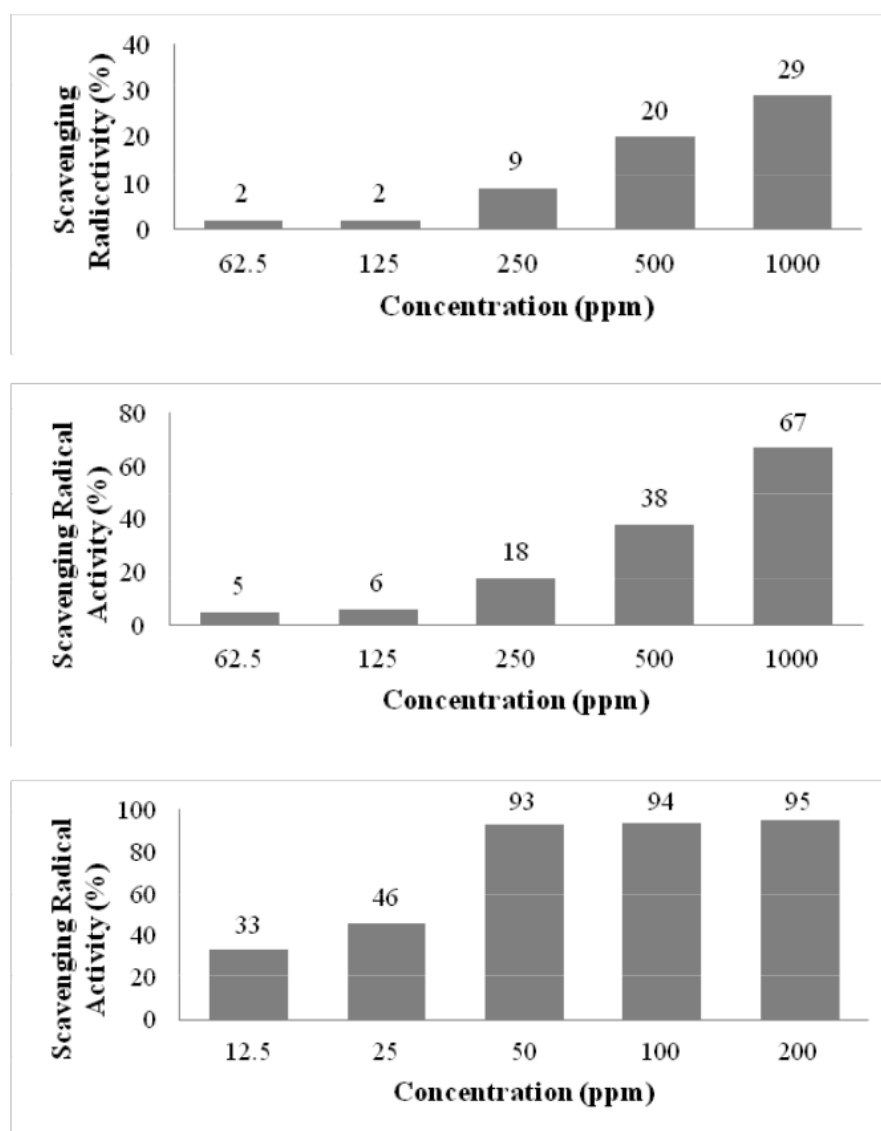


Fig. 1: Scavenging radical DPPH activity extract of *H. pinifolia* Seagrass (A= n-hexane, B=ethyl acetic and C= ethanol)

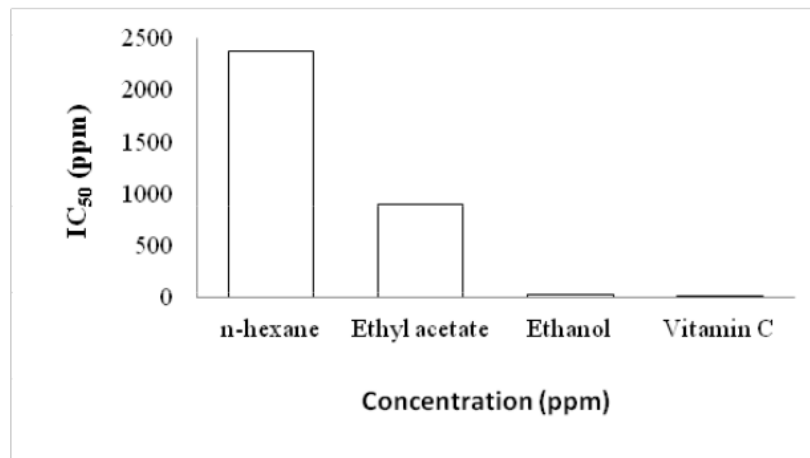


Fig. 2: IC₅₀ from extract of *H. pinifolia* Seagrass

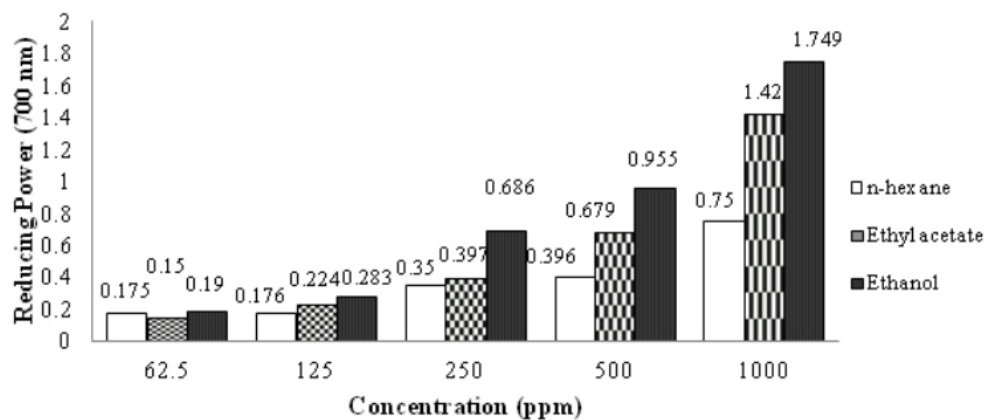


Fig. 3; Reduction power of extract of *H. pinifolia* Seagrass

indicate that the antioxidant activity of the methanol extract of *H. pinifolia* seagrass is higher than that of ethyl acetate and n-hexane extracts. Antioxidant activity of extract *Halodule pinifolia* could be due to their phytochemical compounds. The phytochemical compounds present in the extract, which are responsible for this activity. The phytochemical tests indicated the presence of flavonoids, tannins, saponins, steroids and triterpenoids in the crude methanolic extract.

Reducing power

Reducing power of extract of *H. pinifolia* depicted in Figure 2. Increasing of concentration of *H. pinifolia* indicates an increase in reducing power

The reducing power is considered as a significant indicator of potential antioxidant activity of compound or sample. A potential antioxidant will reduce the ferric ion to the ferrous ion. Reducing power of extract of *H. pinifolia* is probably due to the presence of phytochemical compounds that can serve as an electron donor.

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