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ANALYSIS METALS Fe AND Mn IN SEAGRASS ENHALUS ACOROIDES IN THE WATERS PASARWAJO BUTON

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ABSTRACT

The research aims to identify ferrous metals and manganese in seagrasses *Enhalus acoroides*. The sample used was obtained from the water pasarwajo buton. The sample was extracted, then the metal was analyzed using AAS. Metal concentrations (ppm) are Fe (143.667 mg / kg) and Mn (46.67 mg / kg), respectively. Metal content obtained below the maximum limit and seagrass *Enhalus acoraides* can be used as a bio-indicator of the presence of heavy metals

Key words : *Enhalus acoroides*, seagrass, metals, AAS.

INTRODUCTION

Increasing population causes higher demand for clothing, food and shelter. This has led to an increase in development activities in various sectors that have resulted in irrational and uncontrolled use of ecosystems, resulting in the disruption of living organisms. [7]

Living things and the environment are two inseparable things, mutually influencing each other. Sustainability and environmental damage depend on living things. Coastal water pollution, caused by various activities that are sources of marine water pollution, including housing, industry, transportation and agriculture. These activities have the potential to produce material contamination that damages living systems in coastal ecosystems.[7]

Seagrass is a rooted, vascular plant where seagrass life depends on the source of sediment nutrition for growth (Walker, 1989). Research by Tahril 2010 on the adequacy of micronutrients such as iron, manganese, and copper in ecosystems can determine seagrass growth factors.[9]

Seagrasses through biological processes are able to accumulate heavy metals by binding to organo-metal compounds, so that the levels of heavy metals in seagrasses are much greater than the water content.[4]

Heavy metal accumulation in seagrass occurs naturally, so it can show that seagrass can be used as an indicator organism for heavy metal contamination.[2]

The concentration of metals, namely iron (143,667 mg / kg) and Manganese (46.67 mg / kg). concluded that

seagrasses can be used as bio-indicators of the presence of heavy metals in waters.

METHOD

Material and Tool

Tools used are glass tools commonly used in laboratories, Atomic Absorption Spectroscopy Buck Scientific 205, autoclave, funnel, furnace, GPS, ice box, mortar, microwave, digital balance, ovens, pH meters, Electric Heaters, salinometer.

Materials be used in this study is seagrass *Enhalus acoroides*, aquades, aquabidest, aluminum foil, HNO_3 (concentrated), Whatman 42 paper.

Sampling

Figure 1 below shows the location of sampling, in Pasarwajo waters.

Figure 1. Location maf of research

Procedures

Enhalus acoroides seagrass is taken in a state of low tide, seagrass samples have been cleaned of dead leaves and washed with aquadest water until completely clean, then aerated, cut, after that it is put into a porcelain glass container in a dry oven at 80 ° C , seagrass samples obtained were weighed with a constant weight (fixed weight), then smoothed with mortar.[5,8]

The sample was weighed 1 gram in a beaker, ekstracted with HNO_3 (nitric acid) pa and the solution was heated at 150°C for 30 minutes after it was cooled filtered with Whatman filter paper no 42. The obtained filtrate was put into a 100 mL measuring flask, then added with daquabidest to the mark mark. After that, shake until homogeneous, then analyzed iron and Manganese metals using AAS. [1,5]

RESULTS AND DISCUSSION.

After being analyzed using AAS, concentrations of Fe and Mn metals were obtained as shown in Figure 2 below.

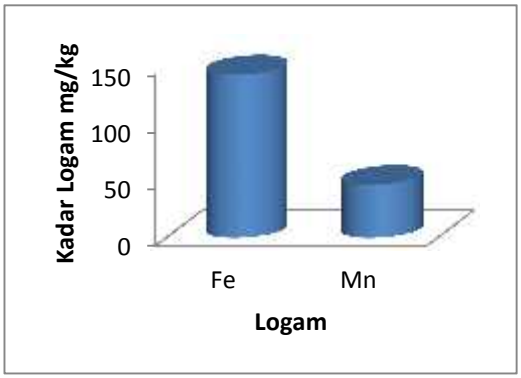

Figure 2. Metal concentration Fe and Mn

Based on the analysis of iron and Manganese, iron metal content of 143.67 mg / kg, manganese content of 46.67 mg / kg. The iron contained in seagrass is very large because iron has a function in photosynthesis.

Iron is a transition metal can form more than one form of oxidation level (Fe^{2+} dan Fe^{3+}), this means that iron has the ability to receive or give the electrons thus has the role of iron in some oxidation-reduction reaction. [3]

Iron is absorbed by seagrass in the form of iron (II). Iron (II) has a 4s0 3d6 electron configuration based on the HSAB theory, iron (II) is a boderline where the preferred donor is the N

functional group of the NH_2 functional group, the S group from SH and the O group from OH-, the bond which is formed on ferrous metals with N, S and O groups derived from protein compounds that are owned by seagrass. [3]

While the metal manganese on seagrass lower than the levels of iron, manganese as a micro elements needed is small quantities and large amounts can be toxic. The metal manganese has an important role in the process of catalic, as actifator some enzymes in the metabolic reactions of respiratio, nitrogen and photosynthesis. [3]

Manganese has the atomic number 25 with the electron configuration $4s^2$ $3d^5$, manganese valence number with varies +2, +3, +4, +6 and +7, but 2 valence with Mn often found in water. [3]

Manganese valence with +2 is a hard acid, so it needs a donor electrons that come from the hard base, follow Andreini, 2008 said that the donors who have Mn liked functional group N of NH and O from OH. The association of metal Mn in N and O, derived from proteins belonging to the seagrass. [3]

The validity of manganese with +2 is hard acid, so it needs donor electrons that come from hard bases, (Andreini, 2008) saying that Manganese (+2) likes donors who have N functional groups of NH and O from O. Manganese metal bonds with functional groups O and N are derived from proteins that have seagrass. [3]

CONCLUSION

Metal concentration in seagrass, Fe (143,67 mg/kg) and Mn (46,67 mg/kg) the ability of seagrass accumulate metals Fe and Mn so seagrass can be bioindicator the presence of metals in waters.

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