

PHYSIOLINGUITOR (PHYSICAL LINGULA DETECTOR) AS A COBALT COMPOUND DETECTOR IN WATER BASED ON PHYSICAL MORPHOLOGICAL CHARACTERIZATION OF INARTICULATE SHELL

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ABSTRACT

Coastal areas are often used for marine transportation, nature conservation, marine cultivation, tourism and fishing settlements. The existence of rapid industrial development and extractive mining activities as well as increasing urbanization, especially in coastal areas without using waste handling facilities, adds to the negative impact on the environment, especially coastal and oceanic, so that the pollution that occurs causes a decrease in the quality of the coastal and marine environment. The coast of Probolinggo City is rich in flora and fauna. One of the interesting fauna is the presence of lingula/lantern shells. The amount that used to be abundant but is now said to have decreased due to unknown factors. This is very interesting to research. The aims of this research include: determine the effect of a solution containing cobalt (Co) on the condition of the whole/lantern shell powder (lingula); determine the effectiveness of a solution containing cobalt (Co) on the whole condition/powder of lantern shell (lingula); knowing the form and workings (reaction) of PHYSIOLINGUITOR in detecting cobalt (Co) contamination in water; and knowing the standard of physical characteristics of PHYSIOLINGUITOR both before and after detecting cobalt (Co) contamination in water. This research was conducted from November 1, 2021 to February 1, 2022. This study used the type of actual research in the laboratory. The research approach used is quantitative and qualitative. The results showed that the best treatment was B3 treatment (PHYSIOLINGUITOR was used to detect a solution of cobalt compounds with a concentration of 10%) with a standard quality of PHYSIOLINGUITOR after detecting the value of detecting a decrease in the pH value of 2 points (increasing acid); the average hygroscopicity value is about 58.89%; the average value of the angle of repose is about 0.421 cm; the average compressibility value is around 2.5%; the average density value is about 0.0486 gram/m²; the average granule flow time is about 2.96 seconds; XRF test results show that the PHYSIOLINGUITOR elemental components after detecting the presence of cobalt compounds show a decrease in the percentage from normal conditions (the largest component of PHYSIOLINGUITOR constituents is phosphorus around 13.8%, calcium around 63.3%, and cobalt around 13.2%) ; The difference from the results of the FTIR test both shows that the PHYSIOLINGUITOR before detecting the cobalt compounds shows the presence of free alcohol C-O ether and O-H groups, while the PHYSIOLINGUITOR after detecting the O-H groups formed for carboxylic acids; and the results of the SEM test for a magnification of 125,000 times showed that the physical morphology structure of the PHYSIOLINGUITOR before detecting it looks oval-shaped with sharp edges, besides that, it is seen that the particles form an independent matrix and there are many voids, but after detecting it looks like all compounds combine to form one matrix and few there are voids.

Keywords: Cobalt compounds (Co), natural detectors, and lantern shells (*Lingula unguis*).