ANALYSIS OF RICE HUSK ASH COMPOSITES AND SHORT-CHAIN PEPTIDES EXTRACTS AS A SOURCE OF ESSENTIAL MICRONUTRIENTS (Fe, Zn AND Ni)

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19/442541/PA/19290

ABSTRACT

Research on the analysis and characterization of rice husk ash composite and short chain peptide extract as a source for fortification has been conducted. This research was conducted with the aim of studying the conversion of chicken feather waste into a source of short-chain peptide, studying the formation of humus in rice husk ash composites and hydrolysates and studying the content of microelements (Fe, Zn, Ni) and heavy metals (Pb, Cd, Cr) in husk ash composites and peptide extracts that have been made.

Composites of rice husk ash and short-chain peptide extract were made by mixing two parts of short-chain peptide extract and one part of rice husk ash. The resulting composite was then analyzed for humic and fulfic acid content using spectrometric methods, FTIR analysis to determine the functional groups contained therein, XRD analysis to determine crystallinity and AAS test to determine the levels of micronutrients and heavy metals. The composite was also applied to leek plants to see its effect on plant growth.

The results showed that the ash-peptide extract composite made was successful. This was characterized by the presence of broadened absorption shown by increasing FTIR absorption at wavelengths of 3500 and 1600 cm^{-1} due to the appearance of absorption for -NH, -OH and C=O amide groups from peptide extracts. The ash-peptide extract composites that have been made contain high levels of the micronutrients Fe, Zn and Ni. The composite also contains a small amount of heavy metals which still meet the technical requirements of organic fertilizer, in accordance with Keputusan Menteri Pertanian RI number 261/KPTS/SR.310/M/4/2019 concerning the minimum technical requirements for organic fertilizers, biological fertilizers and soil amandements.

Keywords: short chain peptide extract, composite, micronutrien