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Synthesis and Characterization of Cassava Bark Nanoparticles

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Abstract

Synthesis and characterization of cassava bark nanoparticles (CBNPs) was carried out using ball milling at 36, 48, 60 and 72 hours. The morphology study was done using SEM and the Gwyddion software was used to determine the particle sizes from the SEM images. The particle distribution for the un-milled cassava bark (CB) was between 1.25 + 0.06 to 19.92 + 1.00 μm, while after milling for 36, 48, 60 and 72 hours the average particle size were 4.07 + 0.20, 4.00 + 0.20 μm, 80.90 + 4.05, 74.50 + 3.73 nm respectively. 13.68 + 0.68 nm was obtained by XRD using Scherrer equation after milling for 72 hours and the XRD results revealed the presence of compounds such as SiO₂, CaCO₃ and KAlSi₃O₈. TEM was used to determine nanoparticle size distribution after milling for 72 hours and the particle size ranged from 9.73 + 0.49 to 114.60 + 5.73 nm for cassava bark nanoparticles (CBNPs), EDX results showed trace element of Si, Ca, K, Fe, Al, O in the CB milled for 72hours.

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