

# Biopolymer from *Musa paradisiaca* Peel Waste and Nanoparticles

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Nowadays, the physical and chemical methods to obtain nanoparticles are expensive, the chemicals used are toxic and carcinogenic. High temperatures and pressure are used, having a great cost of energy and necessary specialized laboratory equipment to reach the optimal measures and morphologies. The green synthesis of nanoparticles presents a great advantage compared to physical and chemical methods, these turn out to be less expensive, non-toxic, they do not require high temperatures or specialized laboratory equipment, friendly to the environment, easily reproducible and capable to elaborate it on a large scale. The initial hypothesis was the morphology and dispersity will be affected by the metal salt concentration in interaction with the concentration of reducing sugars extracted from the *Musa paradisiaca* peel. Base on the results of this project, nanoparticles were synthesized with optimal dispersity of metallic salts, and characterized on Scanning Electron Microscope and UV-Vis Spectrophotometer such as: gold with morphologies associated with possible treatments of cancer, silver with possible bacteriostatic applications and, copper for possible medical and industrial applications; from liquid waste based on water and the preparation of a biopolymer of *Musa paradisiaca* peel with grapheme oxide for development of new degradable materials to the environment with high hardness. It opens the possibility of using different metal salts, such as titanium to form nanoparticles with the ability to catalyze reactions. The possibility to obtain core shell nanoparticles by mixing two different metal salts in the same liquid reducing medium obtained from the residues of organic materials.