

Physiochemical characterization, antioxidative, cancer cells toxicity and food pathogen antibacterial activity of chitosan nanoparticles loaded with *Cyperus articulatus* essential oils

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Essential oil of *Cyperus articulatus* has recognized fungicidal and antibacterial properties the qualitative chemical composition analysis by Gas Chromatography-Mass Spectrometry (GC-MS) revealed the presence of sesquiterpenes, monoterpenes, hydrocarbons and other esters, nootkatone, 6-methyl-3,5-heptadien-2-one, retinine, nopinone, cycloeucaleanol, anozol, toosendanin, furanone, ethanone and vitamin-A. *Cyperus articulatus* Essential Oils (CPEOs) loaded Chitosan Nanoparticles (CSNPs) was successful synthesized using an oil-in-water emulsion and ionic gelation method. The samples were characterized by Scanning Electron Microscopy (SEM), Fourier Transform Infrared Spectroscopy (FTIR) and UV-vis spectrophotometry. CPEOs had a higher radical-scavenging activity than CSNPs and CPEO-CSNPs at initial storage times. CPEO-CSNPs showed the highest ($P < 0.05$) antioxidant activity over prolonged period of time. Antimicrobial activity of five strains of bacteria, *Staphylococcus aureus* (ATCC6538), *Salmonella typhimurium* (ATCC 14028), *Listeria monocytogenes* (ATCC 19112), *Bacillus cereus* (LMG 22730), and *Escherichia coli* (ATCC 8739) showed that all CPEO loaded chitosan nanoparticle inhibited bacterial growth at lower ($P < 0.05$) CPEO loaded chitosan nanoparticle (5 mg/mL MIC) compared to free CPEO (10 mg/mL MIC).

Biography

Confidence Oyebuchi Ukaeje has completed his PhD from the Noble Cyprus International University. He is an active Member of Canadian Society for Microbiology, Nigerian Society for Microbiology.

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