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Preliminary characterization of N-trimethylchitosan as a nanocarrier for malarie vaccine

Petra O Nnamani^{1,2*}, Ngozi J Nwodo¹, Scoles Giacinto²

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Vaccination is considered to be most effective way of fighting infectious diseases like malaria etc [1]. N, N, N-trimethylchitosan (TMC) was synthesized from chitosan. Nanoparticles of the TMC were prepared in various media (milliQ water, Na₂CO₃ (pH 10.92), Na₂HPO₄ (pH 9.01) and alhydrogel[®] beads which were characterized as adjuvant for possible vaccine delivery. The nanoparticles were analyzed using microscopy (Phase contrast microscope and Confocal laser scanning microscope), and Malvern zetasizer Nano- ZS. Time-resolved particle size analysis was performed after one month storage of the TMC nanoparticles at 4 °C. The result of the study showed that PBS was the best medium that produced cationic, monodispersed and stable TMC nanoparticles of less than 65 nm forming a compatibly homogeneous system even upon storage. Microscopy of the polyelectrolyte doped nanoparticles showed a clear coating due to PSS at the periphery of the particles and a fluorescent core with some tiny central hollow cavities Confocal microscopy of the alhydrogel beads showed particle size of 1.6 μm. The fluorescent dye (PSSRhodamine) coated the entire particle surface suggesting a more or less adsorption process for the antigen delivery [2]. Hence, the hope of nanocarrier for malaria vaccine.

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Author details

¹Drug Discovery and Drug Delivery Research Unit, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka 410001, Enugu State, Nigeria.

²Nanotechnology Unit, ICS-UNIDO International Center for High Technology and New Materials, AREA Science Park, Padriciano 99, Trieste, Italy.

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¹Drug Discovery and Drug Delivery Research Unit, Faculty of Pharmaceutical Sciences, University of Nigeria, Nsukka 410001, Enugu State, Nigeria
Full list of author information is available at the end of the article

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