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Preparation and evaluation of self-nano emulsifying drug delivery system of Artemether using natural lipophile

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The aim of this work was to formulate Artemether, a poorly water soluble drug into a Self-Nano Emulsifying Drug Delivery System (SNEDDS) using an indigenous natural lipophile extracted from sesame seeds via cool press. SNEDDS based on the pure indigenous natural lipophile and also blends of the natural lipophile with commercially available modified oil (labrafac CC) were formulated and their application in improving the delivery of Artemether was evaluated. Pseudo ternary phase diagram construction was carried out to identify stable formulations. Stable combinations from the phase diagram were loaded with Artemether and characterized with respect to globule size, Poly Dispersity Index (PDI), viscosity, drug-excipients compatibility and stability, emulsification time, drug loading efficiency, in vitro drug release, infinite aqueous dilution, post dilution drug precipitation and in vivo anti-malarial performance in Swiss male mice infected with lethal strain of *Plasmodium berghei*. The optimized SNEDDS had mean globule size of less than 50.0 nm, showed excellent emulsification time of less than a minute, promoted fast drug release, exhibited no phase separation and demonstrated the highest antimalarial activity. The oil component of the formulation contributed most significantly ($P < 0.05$) to droplet size variations. The result highlighted the potential application of indigenous natural lipophile in the development of a nano drug carrier for the efficient delivery of Artemether, which can be applicable for other Bio pharmaceuticals classification system class II and IV drugs exhibiting identical biopharmaceutical challenges.

Biography

Z S Yahaya has completed his PhD from Ahmadu Bello University Zaria, Nigeria. He is currently working as a Lecturer in the Department of Pharmaceutics, Kaduna State University, Nigeria. He has published more than 5 papers in reputed journals.

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