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# **Poly(D,L-lactic-co-glycolic acid)-based artesunate nanoparticles: formulation, antimalarial and toxicity assessments**

**Key words:** Poly(D,L-lactic-co-glycolic acid) (PLGA), Artesunate-PLGA delivery system, Antiplasmodial, Toxicity

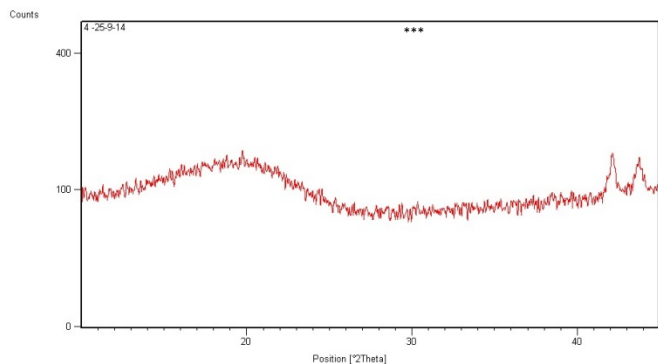
# Introduction

- Malaria is a life threatening disease
- Toxicity and poor bio-distribution of many malaria drugs necessitate the need for new drugs
- Artesunate has short half-life and shows low bioavailability
- Development of a carrier that can maintain a sustained release profile and avoid rapid degradation of the drug is essential for its effective therapeutic usage.

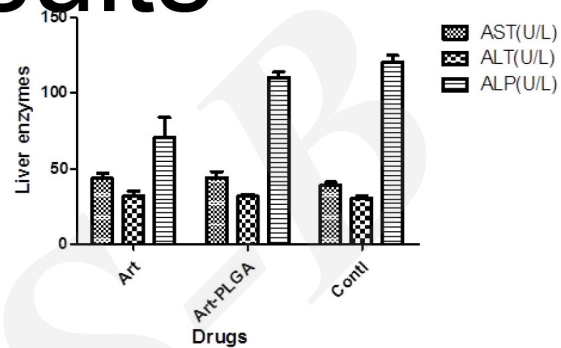
# Methods

- Preparation of nanoparticles
- Measurement of particle size and zeta potential
- X-ray diffraction (XRD) analysis and differential scanning calorimetry (DSC)
- Drug entrapment and encapsulation efficiency
- Antiplasmodial evaluation using the Peters' 4-day suppressive test

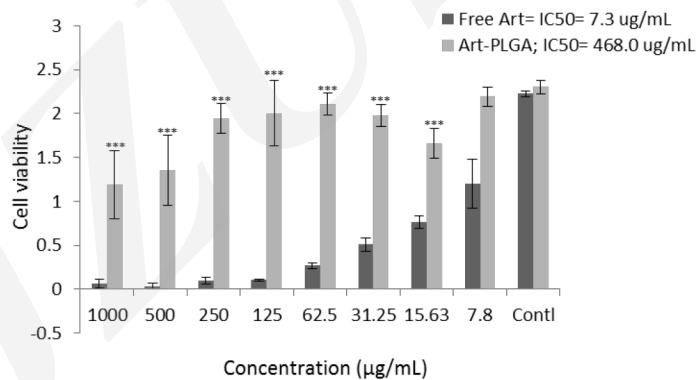
# Results



XRD spectra of formulated polymeric nanoparticles



Hepatic toxicity assessment of free and nanoparticulate artesunate



Cell viability and inhibitory concentrations in free and entrapped drug

# Conclusions

- Artesunate nanoparticle is amorphous in nature
- Absence of a decomposition exotherm indicates the increased physical stability of drug
- There was no sign of hepatic and haematological toxicity following use of the tested drugs
- Artesunate nanoparticle was less cytotoxic than free artesunate in RAW 264.7 cell