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Review

ANTIMALARIAL DRUGS AND THEIR NANOPARTICLES – A SOCIETAL IMPACT

B. PATEL*, S. TRIPATHI, S. SHROTI, S. SHUKLA, A. PANDEY

Department of Chemistry, Dr. Harisingh Gour Vishwavidyalaya (A Central University), 470 003 Sagar (M.P.), India
E-mail: bharatkp94@gmail.com; prof.archnapandey@gmail.com

ABSTRACT

Malaria is an endemic disease caused by a protozoan parasite which is transmitted by female Anopheles mosquitoes around tropical and sub-tropical world. The main factor concerning the spreading of this disease is the increase in the number of drug-resistant parasites. To affect drug resistance, drug delivery systems for biodegradable polymers for the loading of anti-malarial drugs were developed. The formulated polymer loaded anti-malarial drugs nanoparticles are multifunctional features such as good biocompatibility, high percentage drug encapsulation, reduced drug toxicity, targeted drug, controlled release of therapeutic and diagnostic agents. Nanosize particles are expected to reduce the dose of the drug and kinetics of development of resistance in Parasite. Kinetics plays a key role in the study of what the body dose for a drug so these areas of study move towards pharmacokinetics. To evaluate the mechanism of drug release from the matrix tablet data obtained from the drug release studies were analysed according to zero order model, Higuchi model, and Korsmeyer-Peppas model, respectively. Thus obtained biodegradable polymer loaded drug nanoparticles were characterided by using DLS, Zeta analysis, SEM, TEM, AFM and identified by FT-IR, and UV-spectroscopy. In this review, we aim to provide insights into the design and improvement of targeted polymeric drug nanoparticles and to highlight the challenges correlate with the novel class of therapeutics, including the attention of nanoparticles design optimisation, improvement and biopharmaceutical properties. Additionally, we highlight some recent examples from the literature and novel concepts in both the design and use of targeted polymer loaded drug nanoparticles.

Keywords: anophelese, antimalarial drugs, controlled release, diagnostic, encapsulation, pharmacokinetics.

* For correspondence.