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Resealed Erythrocyte as a Novel Drug Delivery System for Cancer Therapy

Deepika, Preeti Thakur*, Ajazuddin, Amit Alexander, D. K. Tripathi

*Rungta College of Pharmaceutical Sciences and Research, Bhilai, Chhattisgarh, E-mail:
preetithakur110@gmail.com*www.peertechz.com

Drug delivery is now entering quite an exciting and challenging era. Significant high costs involved in the development of new drug molecule has compelled scientists all over the world to search for alternative ways of administering the existing drug molecules with enhanced effectiveness. Improper drug administration inside the biological system not only causes distress to other body tissues but also demands more therapeutic molecules to elicit the appropriate response. Among the various carriers used for targeting drugs to various body tissues, the cellular carriers meet several criteria desirable in clinical applications, among the most important being biocompatibility of carrier and its degradation products. Leucocytes, platelets, erythrocytes, nanoerythrocytes, hepatocytes, and fibroblasts etc. have been proposed as cellular carrier systems. Among these, the erythrocytes have been the most investigated and have found to possess greater potential in drug delivery. Therapeutic uses of a variety of drug carrier systems have significant impact on the treatment and potential cure of many chronic diseases, including cancer, diabetes mellitus, rheumatoid arthritis, HIV infection, and drug addiction. Biopharmaceuticals, therapeutically significant peptides and proteins, nucleic acid based biological, antigens, anticancer drug and vaccines, are among the recently focused pharmaceuticals for being delivered using carrier erythrocytes.