



Review Article

Resealed Erythrocytes: Potential Carrier for Delivery of Drugs

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Erythrocytes, also known as red blood cells, have been extensively studied for their potential carrier capabilities for the delivery of drugs and drug-loaded microspheres. Such drug-loaded erythrocytes are prepared simply by collecting blood samples from the organism of interest, separating erythrocytes from plasma, entrapping drug in the erythrocytes, and resealing the resultant cellular carriers. Therefore, these carriers are called resealed erythrocytes. The entire process is based on the response of these cells under osmotic conditions. Upon re-injection, the drug-loaded erythrocytes serve as slow circulating depots and target the drugs to reticulo-endothelial system. Several methods can be used to load drugs or other bioactive compounds in erythrocytes, including physical osmosis-based systems, and chemical methods. Resealed erythrocytes have several possible applications in various fields of human and veterinary medicine. Such cells could be used as circulating carriers to disseminate a drug within a prolonged period of time in circulation or in target-specific organs, including the liver, spleen, and lymph nodes. Slow drug release, drug targeting, targeting RES organ, targeting the liver, enzyme therapy, targeting organs other than those of RES, improvement in oxygen delivery in tissues, delivery of antiviral agents are some of the applications. Erythroosomes and nanoerythroosomes are the recent novel approaches for drug delivery. In near future, erythrocytes based delivery system with their ability to provide controlled and site specific drug delivery will revolutionize disease management. Considering their tremendous potential it is concluded that erythrocyte carriers are “golden cells in novel drug delivery systems” The use of resealed erythrocytes looks promising for a safe and sure delivery of various drugs for passive and active targeting. The same concept also can be extended to the delivery of biopharmaceuticals and much remains to be explored regarding the potential of resealed erythrocytes.

Key Words: nanoerythroosomes, golden cells, resealed erythrocytes, Drug Carriers.

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