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Advances of blood cell-based drug delivery systems

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Abstract

Blood cells, including erythrocytes, leukocytes and platelets are used as drug carriers in a wide range of applications. They have many unique advantages such as long life-span in circulation (especially erythrocytes), target release capacities (especially platelets), and natural adhesive properties (leukocytes and platelets). These properties make blood cell based delivery systems, as well as their membrane-derived carriers, far superior to other drug delivery systems. Despite the advantages, the further development of blood cell-based delivery systems was hindered by limitations in the source, storage, and mass production. To overcome these problems, synthetic biomaterials that mimic blood cell and nanocrystallization of blood cells have been developed and may represent the future direction for blood cell membrane-based delivery systems. In this paper, we review recent progress of the rising blood cell-based drug delivery systems, and also discuss their challenges and future tendency of development.

Keywords: blood cell, erythrocytes, leukocytes, platelets, drug delivery

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