BIOCOMPATIBILITY ASSESSMENTS OF NANOCARRIERS; A MUST FOR NANOMEDICINE DEVELOPMENT

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Abstract

Nanomedicine, using nanoscale delivery vehicles, offers several potential developments in healthcare. However, most carriers are inherently cytotoxic. Therefore, it is of utmost importance in introducing a carrier for in vivo drug delivery applications that the carrier is biocompatible and nonimmunogenic. Biocompatibility of a carrier must be assessed in animal models, but in vitro cell culture methods have become progressively more popular to reduce the amount of animal testing. Additionally, in vitro biocompatibility tests have shown a higher sensitivity compared to in vivo biocompatibility tests. In this paper, various experiments such as MTT, Neutral Red, Coagulation tests (prothrombin time and activated partial thromboplastin time), and Complement Activation are discussed in the first part as well as in vivo toxicity tests in animal in the second part. Evaluating the biological and physicochemical properties of new nanocarriers will sequence to valuable knowledge for future design of drug delivery systems.