

TUMOR-TARGETED NANOPARTICLES: STATE-OF-THE- ART AND REMAINING CHALLENGES

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1.1 INTRODUCTION

Bringing a drug only to target tissues without spilling any molecule in unwanted places would be an ideal goal for any pharmacological therapies [1]. Owing to the dose-limiting side effects of chemotherapy, a number of drug delivery strategies have been developed in the context of cancer, where “targeted” therapy is most anticipated. Most tumor-targeted drug delivery systems are based on the fact that cancer cells express various molecular markers that are distinguished from those of normal cells. In particular, nanomedicines have received enormous attention in the past decades as a potential tool to increase the selectivity of chemotherapy and diagnosis, due to the small size conducive to circulation and the large surface area to volume ratio that facilitates surface functionalization. Several nanomedicine products have been launched in the market or in the clinical development stage as summarized in Table 1.1. Newer approaches are actively developed to increase target selectivity, although the number of targeted nanomedicines that reached the later phase of