

# NANOCRYSTALS PRODUCTION, CHARACTERIZATION, AND APPLICATION FOR CANCER THERAPY

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## 8.1 INTRODUCTION

It is estimated that two-thirds of the newly synthesized drugs are poorly soluble in water [1]. Delivery of these compounds requires significant efforts and, in some cases, becomes extremely difficult. Poor solubility limits the bioavailability when delivered through the oral route; for many compounds, parental delivery, which requires special formulation treatment to overcome the solubility limit, remains to be the only choice. A common practice is to solubilize a poorly soluble drug with specialized organic molecules, which include organic solvents, surfactants, and macromolecules. Unfortunately, adverse effects resulted from the use of such solubilizing molecules, for example, hypersensitivity reactions, nephrotoxicity, neurotoxicity, and neutropenia, have been reported [2,3]. In addition, the individually solubilized drug molecules can also reach healthy organs and tissues indiscriminately and inflict undesired effects. Hence, there is a need for developing formulation that can deliver poorly water-soluble drugs, including anticancer agents.

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