

ABSTRACT

Development of Pluronic[®]-based Micelles as Nanocarrier to Overcome Multidrug Resistance (MDR) in Cancer

Literature Review

Anisa Firdaus

Multidrug resistance (MDR) is the ability of cancer cells to survive against a wide range of anticancer drugs, with the main mechanism of increasing drug efflux. This mechanism can deplete active drugs in cancer cells and thus require higher doses to achieve cytotoxic effects. However, high doses can cause toxicity in normal cells. Recently, Pluronic[®]-based micelles have significant development in cancer therapy. This nanocarrier can selectively carry anticancer drugs thereby increasing efficacy and decreasing toxicity in normal cells. Several studies have also modified Pluronic[®]-based micelles with the addition of ligands, pH-responsive groups, and so on which can increase their effectiveness in cancer treatment. This review article aims to determine the effect of the use of modified and unmodified Pluronic[®]-based micelles on the physical characteristics of micelles and their effectiveness in overcoming multidrug resistance. The articles used in this review were obtained through the PubMed and Sciencedirect databases with predetermined keywords. From this review, it can be concluded that modified Pluronic[®]-based micelles have a larger size than unmodified Pluronic[®]-based micelles. However, this size still qualified for targeting tumor cells. Modified and unmodified Pluronic[®]-based micelles are also known to have spherical morphology, negative zeta potential value, and sustained drug release. On the other hand, in overcoming multidrug resistance cancer, modified Pluronic[®]-based micelles have a higher effectiveness than unmodified Pluronic[®]-based micelles seen from the cytotoxicity effects and cellular uptake.

Keywords: Pluronic[®], micelles, nanocarrier, multidrug resistance, cancer