

Resistance to platinum-based cancer drugs: A special focus on epigenetic mechanisms

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Abstract

Chemoresistance is a significant clinical challenge, limiting the drug response in cancer. Several mechanisms associated with drug resistance have been characterized, and the role of epigenetics in generating resistance to platinum-based drugs has been clarified. Epigenetic mechanisms such as DNA methylation, histone modification, long noncoding RNA, and microRNA affect the expression of genes implicated in absorption, distribution, metabolism and excretion (ADME) of drugs, and other non-ADME genes that encode enzymes involved in the processes of cell proliferation, DNA repair, apoptosis and signal transduction key in the development of chemoresistance in cancer, specifically in platinum-based drugs. This review summarizes current discoveries in epigenetic regulation implicated in platinum drug resistance in cancer and the main clinical trials based on epigenetic therapy, evaluating their potential synergy with platinum-based drugs. © 2021

Author keywords

ADME gene; cancer; drug resistance; epigenetics; non-ADME gene; platinum-based drugs