

EPIGENETIC CANCER CAUSES AND DRUGS

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Abstract

Epigenetic mechanisms that modify chromatin structure can be divided into four main categories: DNA methylation, covalent histone modifications, noncovalent mechanisms such as incorporation of histone variants and nucleosome remodeling and non-coding RNAs including microRNAs (miRNAs). In the several cancers, one of the epigenetic changes is hypermethylation of the promoter region of genes of the tumor suppressor genes. Therefore, promoter-region hypermethylation events are main mechanisms causing loss of key gene function in neoplastic cells. Beside, Post-translational modification of the histones of chromatin plays a fundamental role in regulating gene expression. . One of the most factors in the regulation of gene expression is the balance of histone acetylation and deacetylation. Histone acetylation induced by histone acetyl transferases is associated with gene transcription, while histone deacetylation induced by histone deacetylase activity is associated with gene silencing and tumor development. Epigenetic therapy tries to reverse the aberrations followed to the disruption of the balance of the epigenetic signalling ways through the use of both natural compounds and synthetic molecules, active on specific epi-targets. Here, we report the epigenetic cause and drugs of cancers by highlighting epigenetic drugs including demethylating and histone deacetylase inhibitor drugs.

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