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HDAC inhibitors as epigenetic regulators for cancer immunotherapy

HDACi in cancer immunotherapy

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ABSTRACT

In recent years, anti-tumor immunotherapy has shown promising results, and immune-oncology is now emerging as the fourth major wave in the treatment of tumors after radiotherapy, chemotherapy and molecular targeted therapy. Understanding the impact of the immune system on neoplastic cells is crucial to improve its effectiveness against cancer. The stratification of patients who might benefit from immunotherapy as well as the personalization of medicine have contributed to the discovery of new immunotherapeutic targets and molecules. In the present review, we discuss the mechanistic role of histone deacetylase inhibitors (HDACi) as potential immunomodulating agents to treat cancer. Our current understanding of the use of HDACi in combination with various immunotherapeutic approaches, such as immunomodulating agents and cancer vaccines, is also addressed. The potential clinical applications of the growing number of novel epigenetic drugs for cancer immunotherapy are widening, and some of these therapies are already in clinical trials.

Abbreviations:

AICD: activation-induced cell death

AML: acute myeloid leukemia

APC: antigen-presenting cells

CAR: coxsackie- and adenovirus receptor

CDKs: cyclin-dependent kinases

CG: cancer germline