Epigenome targeting approaches for colorectal cancer

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Abstract

Introduction

Colorectal cancer (crc) is a life threatening disease with high prevalence in industrial and developing countries. epigenetic modifications are early events that happen during colorectal tumorigenesis, and contribute to diverse features of malignant phenotype.

Methods

Number of recent review articles included key words epigenetic modification, colorectal cancer and cancer cell self-renewal were extracted from databases pubmed and web of science.

Results

The pathology of colorectal adenomas is associated with overactivity of cox-2, epidermal growth factor receptor (egfr), and wnt and kras pathways, while metastatic colorectal carcinoma is mainly caused by inactivation of tumor suppressor gene tp53 and downregulation of tgf-ÃŸ signaling. epigenetic alterations frequently reported in cancers include aberrant methylation of cpg islands that often result in repression of tumor suppressor genes, and abnormal histone modifications that cause genomic instability. reactivation of self-renewal signaling, including shh, notch, and tgf-ÃŸ/stat3, by epigenetic changes is observed in most cancers. accordingly, direct targeting of such pathways, for instance wnt in crc, might be eï¬€ective against both stem and dediï¬€erentiating cancer cells. a number of beneficial wnt inhibitors that have been developed include drugs targeting tankarases 1 and 2, porcupine, and disheveled. nevertheless, more ideal therapeutics could be those affecting downstream targets that have crosstalk with other signaling cascades such as tcf/lef, twist and myc.

Conclusion

To sum up, approaches that reverse epigenetic modiï¬• cations associated to self-renewal of cancer cells hold great promise for crc treatment.

Keywords

Epigenetic modification, colorectal cancer, self-renewal