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Opinion

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Anti-inflammatory agents in chronic inflammation induced cancer

Abstract

Inflammation is a defensive action against noxious stimuli. If the acute inflammation is aggravated chronically, chronic inflammation is involved in tumor initiation, tumor promotion, and tumor progression by activation of NF-KB, a key transcription factor induced chronic inflammatory mediators. Anti-inflammatory agents such as dietary supplements, gut microbiota and anti-inflammatory cytokines involved in preventing, therapeutic, and health promotive action against cancer without adverse effects and inexpensive. This article briefs about the role of anti-inflammatory agents in action against cancer.

Keywords: NF-KB, STAT-3, Vitamin a, b, c, IL-2, IL-12, IFN-δ, gut microbiota

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Introduction

Most of all cancers more than 90 percent of all cancers are associated with external environmental factors such as chemicals such as arsenic, benzene, lead, silver, carbon monoxide, viruses such as HPV, EBV. Chronic inflammation or infectious agents is a seventh hall mark of cancer accounts 25% of all cancers. 1/3 rd of all cancers are related to dietary factors. Current advanced treatment protocols consist of surgery, chemotherapy and radiotherapy has not improved the prognosis of cancer patients with adverse effects and expensive. There is no treatment till now to killonly cancers cells without killing normal cells. Current treatment should focus on only to kill cancer cells without killing normal cells.

Chronic inflammation and cancer

Chronic inflammation associated cancer includes head and neck cancer, liver cancer, colon cancer, pancreatic cancer, prostate cancer, esophageal cancer, lung cancer, prostate cancer, bladder cancer etc by activating inflammatory mediators such as IL-1,TNF-α, IL-6, EGF from inflammatory cells such as macrophages, neutrophils and mast cells involved in tumor progression by activation NF-KB, a key transcription factor, which involve in cell proliferation by (cyclin D, E), cell survival (BCL-2, BCL-XL), angiogenesis (IL-8,VEGF,HIF-1α),genomic instability (NO, AID, Arginase-1,ROS,RNS),Immunomodulation (TGF-β, IL-4, IL-5, IL-13, IL-10), invasion and metastasis (UPA, Mmp's-2, 9).[1–3]

Anti-inflammatory agents on cancer

Anti-inflammatory dietary agents such as proteins, Vitamin A, C, E rich foods such as tomatoes, nuts, raspberry, blue berry, oranges, nuts, and soya. Other dietary agents include curcumin, ginger, garlic, pepper will have anti-inflammatory activity, anti-tumor activity by inhibiting NF-KB, a key transcription factor involved in progression of cancer and anti-viral activity.[4–6,11–14]

Some of the cytokines such as IL-2, IL-12, and IFN-γ release by immune cells have anti-inflammatory and anti-tumor activity. In human body only 23,000 genes are present but 100 trillion germs are present in involved in homeostasis. Majority of germs are present in Gut, where out immune system lies. Gut microbiome consists of symbiotic colonies bacterial, viral and fungal species involved in anti-inflammatory, immune stimulatory and anti-tumor activity. Some Probiotic species involved in anti-inflammatory and anti-tumor activity.[7–10]

How effective is this anti-inflammatory diet in prevention or limiting the progression of tumor at various stages?

How effective is anti-inflammatory cytokines in limiting the progression of tumor at various stages?

How effective is the gut microbiome in prevention or limiting the progression of tumor at various stages? To improve the prognosis and survival rate of cancer patients without adverse effects and inexpensive.

Conclusion and future perspective

Anti-inflammatory agents such as dietary supplements, cytokines, and gut microbiota have anti-tumor activity by enhancing immunity, suppressing inflammation or oxidative stress, which helps in preventive, therapeutic action, and health promotive action , without adverse effects and inexpensive. Thorough understanding of anti-inflammatory agents ,it's mechanisms of actions on immunity, anti-inflammatory activity, and on oxidative stress, dosage of anti-inflammatory agents helps in better future holistic management of cancer with better prognosis and survival rate.

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Conflict of interest

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