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Cannabidiol Connection with Cancer

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EDITORIAL

Cannabinoids, which are active components of the Cannabis sativa plant, were utilised as medicinal treatments for a range of ailments in traditional medicine for millennia before becoming stigmatised owing to their euphoric properties. After the discovery of the chemical structure and isolation of various substances in the second half of the nineteenth century, and the subsequent development of cannabinoid-based drugs that have been FDA approved primarily to treat chemotherapy-induced nausea, insomnia, and appetite, epilepsy, spasticity, and pain management, phyto-cannabinoids were re-evaluated.

Then came the elucidation of the endocannabinoid system, which evolved from the initial type 1 and type 2 cannabinoid receptors and their endogenous ligands (especially N-arachidonylethanolamine, or anandamide, and 2-arachidonoylglycerol) to the emerging complexity of a larger system made up of additional putative receptors, ligands, and enzymes, collectively known as endocanna. Unfortunately, despite a growing body of evidence pointing to cannabis' potential anti-carcinogenic properties, there are currently little data to back up those pre-clinical trials.

Four original papers and six review articles in the current study subject offer new crucial pieces of data on the involvement of cannabis in different kinds of cancer and their methods of action. First, Singh et al. examine the research on cannabis' anti-cancer properties and their action in prostate cancer as cell proliferation inhibitors, signalling molecules, apoptosis inducers, and cell motility deactivators. Although numerous routes employed by cannabis to cause cancer cell death have been discovered, the mechanism of action remains unknown, according to the scientists. Autophagy is one of the important processes involved in the genesis and progression of cancer. The molecular mechanism and function of this complicated process in different forms of cancer, as well as the role of cannabinoids in its control, are being investigated by scientists. Autophagy's ambiguous role in tumour propagation, inhibitory in early stages through anti-inflammatory and anti-necrosis action and supportive in later stages by giving energy to cancer cells, is an intriguing starting point for novel treatment development. Several studies have shown that cannabinoids inhibit cancer cell proliferation in vitro and in some in vivo models by activating the p8/TRIB3 pathway; consistently, different cannabinoids in combination with radiotherapy have been found to reduce tumour growth by promoting autophagy; however, these promising data still lack a proper mechanistic understanding. Scientists investigated synthetic cannabinoids WIN55,212-2 and JWH133 in glioblastoma cells expressing high amounts of CB2 receptors in their study. These researchers employed five glioma cell lines and patient-derived cells that were resistant to conventional treatment due to a loss of the tumour suppressors p53 and/or PTEN. Inactivation of particular autophagy genes increased the observed cannabis-induced autophagy and apoptotic cell death, suggesting cannabinoid usage as a viable novel treatment approach for glioblastoma.