

Anticancer Properties of Cordyceps Militaris

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Abstract

Cordyceps militaris, a type of medicinal mushroom, has garnered significant interest in recent years for its potential anticancer properties.

Keywords: Anticancer Properties, Cordyceps

Chemical Composition

Cordyceps militaris contains several bioactive compounds that are believed to contribute to its medicinal properties.

- **Cordycepin (3'-deoxyadenosine):** This is the most studied compound in *Cordyceps militaris* and has been shown to possess various pharmacological activities, including anti-cancer effects.
- **Polysaccharides:** These are complex carbohydrates that have immunomodulatory and antitumor activities.
- **Sterols:** These compounds have been found to exhibit anti-inflammatory and anticancer effects.
- **Nucleosides and nucleobases:** These compounds can interfere with nucleic acid metabolism in cancer cells.



Safety and Toxicity

Cordyceps militaris is generally considered safe for consumption, with few reported side effects. However, the quality and purity of supplements can vary, and it's essential for consumers

to choose products from reputable sources. It's also advisable for cancer patients or those at risk to consult with healthcare providers before using *Cordyceps militaris* as a complementary treatment.



Mechanisms of Anticancer Activity

Induction of Apoptosis

Cordycepin and other compounds in *Cordyceps militaris* can induce apoptosis (programmed cell death) in cancer cells. This is a crucial mechanism by which anticancer agents eliminate malignant cells.

Cell Cycle Arrest

Cordyceps militaris extracts can cause cell cycle arrest, particularly at the G2/M phase, preventing the proliferation of cancer cells.

Anti-angiogenesis

Compounds in *Cordyceps militaris* can inhibit angiogenesis, thereby starving the tumor of nutrients and oxygen needed for its growth.

Immune System Modulation

They can activate macrophages, natural killer (NK) cells, and other components of the immune system that target and destroy cancer cells.

Inhibition of Metastasis

This is often achieved by modulating the expression of matrix metalloproteinases (MMPs), which are enzymes that degrade the extracellular matrix and facilitate cancer spread.

Oxidative Stress Reduction

By neutralizing free radicals, the mushroom's compounds protect cells from DNA damage and other carcinogenic processes.

