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A novel dual-action drug targeting cancer and respiratory syndromes

A novel compound inhibiting translation and inducing p53 independently of DNA damage, with potential for treating both cancer and acute respiratory syndromes.

Technology No. 20180103

IP Status: Pending US Patent; **Application #:** 16/556,690

Applications

- Cancer treatment
- Acute respiratory syndrome treatment

Key Benefits & Differentiators

- Exerts two anti-cancer effects simultaneously: 4Ei-10 molecule both inhibits proliferation (through blocking cap-dependent protein translation) and induces cell-cycle arrest and apoptosis (through upregulation of p53).
- Minimizes side-effects and risk of future cancers developing: Unlike most chemotherapy compounds, 4Ei-10 works without causing DNA-damage.
- Effective against a wide variety of cancers: As p53 has been shown to combat many cancers, 4Ei-10 has exhibited effectiveness against a variety of cancer cell lines in vitro.

Technology Overview

Researchers at the University of Minnesota have developed a small molecule (4Ei-10) that shows promise not only in the treatment of cancer but also in addressing acute respiratory syndromes. This compound achieves its anti-cancer effects through two distinct mechanisms: first, by inhibiting the translation of new proteins, thereby blocking cell proliferation, and second, by activating the potent anti-cancer protein, p53, which induces cell cycle arrest and apoptosis. Importantly, unlike traditional chemotherapeutic drugs, 4Ei-10 achieves p53 upregulation without causing DNA damage, potentially mitigating both the side effects associated with current treatments and the risk of secondary cancers. This dual mode of action

positions 4Ei-10 as a versatile therapeutic agent that could offer a "double-edged sword" against aggressive cancers while also holding promise for the treatment of acute respiratory syndromes.

Phase of Development

In vitro assessment. 4Ei-10 has been tested on a variety of cancer cells including neuroblastoma, pediatric glioma, breast cancer and prostate cancer cells showing it inhibits proliferation and increases apoptosis and cell cycle arrest.

Researchers

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Publications

Induction of the p53 Tumor Suppressor in Cancer Cells through Inhibition of Cap-Dependent Translation
Molecular and Cellular Biology, https://mcb.asm.org/content/38/10/e00367-17

Ready for Licensing

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