Research suggests natural compound could be promising new alternative treatment for colon cancer

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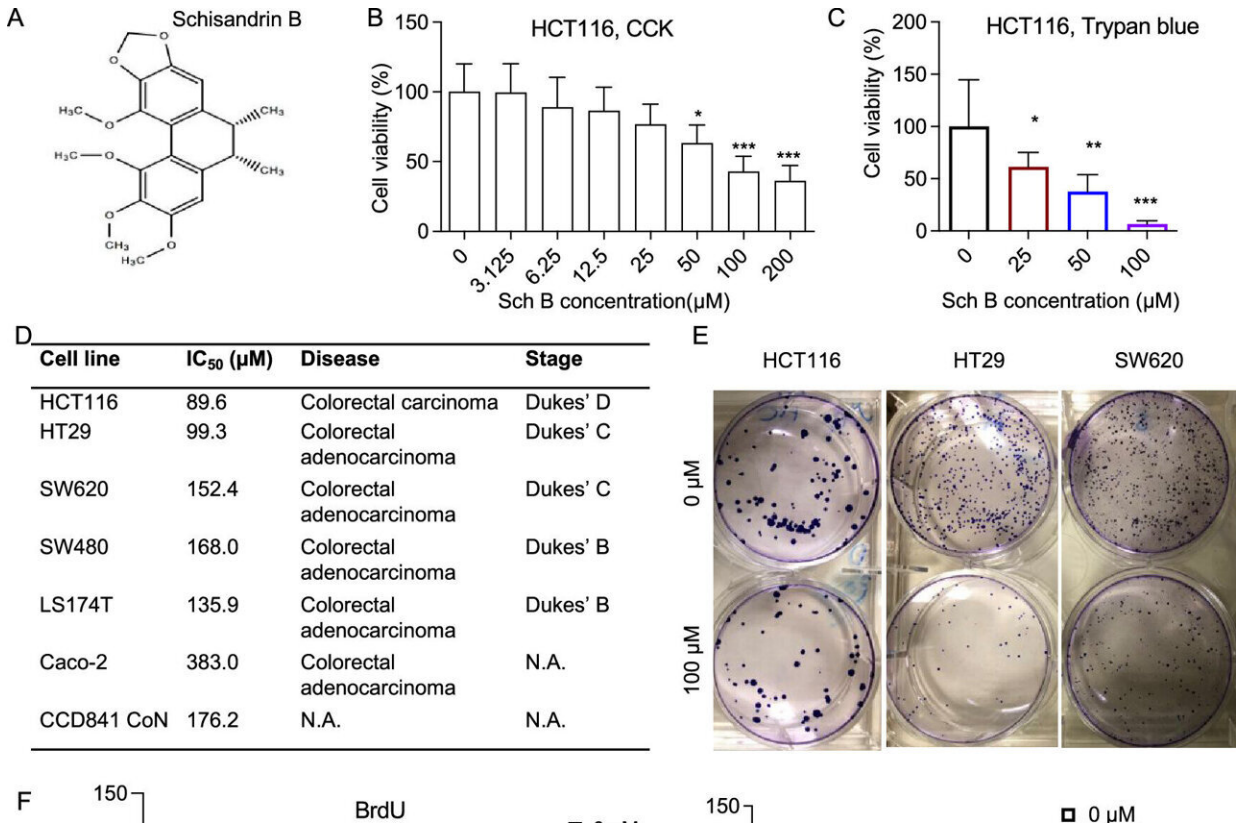

Cell line	IC_{50} (μM)	Disease	Stage
HCT116	89.6	Colorectal carcinoma	Dukes' D
HT29	99.3	Colorectal adenocarcinoma	Dukes' C
SW620	152.4	Colorectal adenocarcinoma	Dukes' C
SW480	168.0	Colorectal adenocarcinoma	Dukes' B
LS174T	135.9	Colorectal adenocarcinoma	Dukes' B
Caco-2	383.0	Colorectal adenocarcinoma	N.A.
CCD841 CoN	176.2	N.A.	N.A.

Schisandrin B inhibits the proliferation of human colon cancer cells. Credit: *ACS Pharmacology & Translational Science* (2024). DOI: 10.1021/acsptsci.4c00009

A new study has discovered a naturally occurring compound found in

fruit has the potential to be an effective alternative treatment for colon cancer. The disease, which affects the large intestine, remains a significant global health concern, ranking as the third most common cancer worldwide.

With the alarming projection of 3.2 million new cases per year and 1.6 million deaths by 2040 by the World Health Organization, there is an urgent need for innovative and less toxic therapeutic approaches to treatment.

A team of international scientists from the Universities of Portsmouth and Hong Kong have found a polyphenol called Schisandrin B (Sch B) exhibits a remarkable anti-tumorigenic effect on colon cancer.

The compound is found in the fruit of Schisandra chinensis, also known as the magnolia or five-flavor berry, which is native to forests of Northern China, the Russian Far East, and Korea. Wild varieties are also found in Japan and it is often used in plant-based foods and drinks.

Existing research has shown Sch B has anti-cancer properties in liver, breast, ovarian, gastric, and gall bladder cancers. Until now, the mechanism underlying the anti-tumorigenic effect of Sch B in colon cancer has not been fully understood.

Senior author Dr. Murphy Wan from the University of Portsmouth's School of Pharmacy and Biomedical Sciences said, "Conventional cancer therapies often have various side effects and organ toxicities, resulting in a lower quality of life for patients. "

"Also, the cost of the chemotherapy for colon cancer is high. In the UK alone, it's estimated colon cancer costs the economy £1 billion."

"Because of this, there is an urgent need to develop new approaches to

cancer treatment that could lead to improved clinical outcomes. Our data have discovered an entirely new approach which may offer a safe and cost-effective treatment option."

The study, published in *ACS Pharmacology & Translational Science*, employed a combination of Raman spectroscopy, RNA-sequencing, molecular and biological experiments.

It found Sch B had the following benefits:

- It is a natural polyphenol form with high tumor-killing capacity and high degree of specificity
- It treats different stages of colon cancers, especially more effective for the late stage of colon cancers
- It has shown very low toxicity against normal cells compared to current available drugs

Co-Lead author, Professor Hani El-Nezami, from the University of Eastern Finland's School of Medicine, added, "Polyphenols have shown significant efficacy in preventing cancer development and exhibiting anti-cancer properties. They have potent antioxidative properties, which help prevent cancer cells from spreading."

"Our findings also support the hypothesis that Sch B has a similar therapeutic effect against colon cancer as it does with other cancer types."

"By unraveling the molecular mechanism underlying its anti-tumorigenic effect, we have laid the foundation for further exploration of the compound as a potential treatment option."

The team recommends that the compound should now be further explored as a novel and more specific approach to colon cancer therapy.

More information: Vanessa Anna Co et al, Schisandrin B Suppresses Colon Cancer Growth by Inducing Cell Cycle Arrest and Apoptosis: Molecular Mechanism and Therapeutic Potential, *ACS Pharmacology & Translational Science* (2024). DOI: 10.1021/acsptsci.4c00009