PURDUE INNOVATES | Office of Technology Commercialization

Methods for Treating Castration-Resistant Prostate Cancer

Cyclic imine Mannich electrophiles covalently target tyrosine and other residues for tunable covalent drug design.

Researchers at Purdue University have discovered a new method of treating castration resistant prostate cancer (CRPC) using combination drug therapy. Enzalutamide (EZ) is a FDA approved, non-steroidal anti-androgen drug for management of CRPC; however, patients develop resistance to the drug in a short period of time. Another strategy of targeting CRPC is to inhibit enzymes involved in cholesterol metabolism, since cholesterol is a precursor to androgen and its metabolism is dysregulated in prostate cancer.

Purdue researchers found that a combination treatment of EZ and inhibitor of acyl-Coenzyme A:cholesterol acyltransferase (ACAT1) sensitized EZ-resistant CRPC cells to EZ treatment and reduced cancer cell colony formation and cell proliferation more than either drug alone.

Technology Validation: Intraperitoneal injection of the combination therapy of EZ & ACAT1 inhibitor showed greater anti-cancer effects and reduced xenograft tumor volume in nude mice derived from EZ-resistant CRPC cell lines compared to single treatments of EZ or ACAT1 inhibitor alone

Advantages

- Increased sensitivity of drug-resistant CRPC tumors to approved prostate cancer drug, EZ therapy

- Combination therapy has greater anti-cancer potential than single treatment of EZ or ACAT1 inhibitor

Applications

Technology ID
2022-KIM-69751

Category
Pharmaceuticals/Other

Authors
Kee Hong Kim
Sora Kim

Further information
Clayton Houck
CJHouck@prf.org

View online

- CRPC treatment

- Prostate cancer treatment

Related Publication: Modulation of Cholesterol Metabolism Improves Response to Enzalutamide Treatment in Prostate Cancer

Current Developments in Nutrition, Volume 5, Issue Supplement_2, June 2021, Page 269, https://doi.org/10.1093/cdn/nzab036_011

TRL: Pharmaceuticals

Intellectual Property:

NATL-Patent, N/A, Republic of Korea

Provisional-Patent, 2022-03-23, United States

PCT-Patent, 2023-03-22, WO

Utility Patent, 2023-03-22, United States

Keywords: Cholesterol metabolism, Combination Therapy, CRPC, Pharmaceuticals, Prostate cancer treatment