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Benzamide or N-hydroxybenzamide Kinase Inhibitors Derived from Doebner-Povarov Reaction

Adding plasticizers to amorphous solid dispersions enables significantly higher drug loadings for smaller, more effective drug tablets by improving drug release without toxic surfactants.

Researchers at Purdue University have developed new drugs to treat cancer, inflammation, and neurological diseases. The researchers' previous anticancer compound, HSD1217 a 4-(3H-pyrazolo[4,3-f]quinolin-7-yl)benzamide was only moderately effective at inhibiting Cyclin Dependent Kinases, CDKs. CDK2 and CDK12 are emerging as important therapeutic targets for cancer treatment. By modifying the Benzamide moiety of HSD1217, the researchers developed HSH2177 and HSD1993 analogs that have dramatically improved activity in inhibiting CDKs. By inhibiting CDK function, these compounds could be used as potential anti-cancer agents, anti-inflammatory agents, or agents against neurological diseases.

Technology Validation: The new drugs were validated in vitro. HSH2177 inhibited CDK2 and CDK12 with IC50 values of 7 nM and 27 nM, respectively. HSD1993 inhibited CDK2 and CDK12 with IC50 values of 4 nM and 9 nM respectively. These IC50 values are much lower than those of HSD1217, which inhibits CDK2 with an IC50 value of 185 nM.

Advantages:

- Highly specific at targeting CDK2 and CDK3

- Potently inhibits Tyrosine Kinase 3, FLT3

Applications:

- Treating cancer, inflammation, and neurological diseases

Related publication:

Technology ID

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Category

Biotechnology & Life Sciences/Biomarker Discovery & Diagnostics

Chemicals & Advanced Materials/Specialty & Performance Chemicals

Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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Dual FLT3/haspin kinase inhibitor based on 3H-pyrazolo[4,3-f]quinoline scaffold with activities against acute myeloid leukemia

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Intellectual Property:

Provisional-Patent, 2022-06-02, United States | NATL-Patent, 2023-06-02, Japan | NATL-Patent, 2023-06-02, Europe | PCT-Patent, 2023-06-02, WO | NATL-Patent, 2023-06-02, India | NATL-Patent, 2023-06-02, Canada | NATL-Patent, 2023-06-02, China | NATL-Patent, 2024-11-29, United States

Keywords: CDK inhibitor, Cyclin Dependent Kinases, HSH2177, HSD1993, anti-cancer agents, anti-inflammatory agents, neurological diseases treatment, CDK2, CDK12, FLT3, pyrazoloquinoline scaffold, acute myeloid leukemia