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Nicotinamide-based Compounds as Potent Inhibitors of Translational- and Transcriptional-related Kinases

Orally bioavailable dual-action compounds that target two cancer-driving proteins simultaneously to potently inhibit diverse solid tumors, including breast, lung, and renal cancers.

Researchers at Purdue University have designed molecules to concurrently inhibit two proteins important in tumorigenesis, MNK1/2 and p70S6K. Pharmaceutical companies have pursued MNK1/2 and p70S6K as individual targets; however, drugs targeting these proteins performed poorly as monotherapies. By inhibiting both MNK1/2 and p70S6K with a single molecule, the Purdue researchers' orally bioavailable compounds potently inhibit several solid tumor cancer cell lines, including breast, ovarian, lung, and colon cancer cells.

Technology Validation: At 200 nM, one of the drugs designed by the researchers completely inhibited the growth of Caki-1 (renal cancer) and MDA-MB-231 (breast cancer) cells. Compounds were tested against the NCI-60 cell line panel.

Advantages

- Targets two oncogenic proteins with a single molecule

- Effective against multiple solid tumor cell lines

- Orally bioavailable

Applications

- Anticancer drugs

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