



Office of Technology Management

Novel Inhibitors of Animal Cell Motility and Growth

Technology Reference

CV35

Contact

Connie M. Cleary
Office of Technology
Management
1737 West Polk
Suite 312 AOB
MC 682
Chicago, Illinois
60612

ccleary@uic.edu

Phone: 312-996-0447

Fax: 312-996-1995

Inventors

Arun Ghosh

Gabriel Fenteany

Kevin McHenry

Sudha Ankala

Field

Oncology

Key Words

Cell motility inhibitors

Cell proliferation
inhibitors

Oxazolidinone-
containing compounds

Specific inhibitor of
cell motility

License Status

Seeking licensing
partner

Patent Status

Patent application
published 12/25/2003

Application No.
20030236290

Overview

Cell motility is a central feature of a range of normal and pathological processes, including embryonic development, tissue repair, immune cell function, angiogenesis, and cancer metastasis. A large number of proteins are known or suspected to play roles in regulating actin dynamics. While there are now many available small molecules that target the actin cytoskeleton directly, there is a paucity of specific inhibitors of actin-binding proteins and other immediate regulators of actin dynamics and cell movement.

Technical Summary

The inventors identified an oxazolidinone-containing compound, UIC-1005, that inhibits cell motility and cell proliferation in a mammalian cell culture system at concentrations, at which there is no evidence of general toxicity. By screening small molecules of unknown function the researchers were trying to find novel inhibitors or activators of cell motility and cell proliferation. Such compounds are likely to be lead anti-cancer drugs, targeting different control points in cancer progression.

The bioactivity of this class of chemical structures has never been described before. Unlike some 3,5-disubstituted oxazolidinones, UIC-1005 does not have anti-bacterial activity against either Gram-positive or Gram-negative bacteria. The analogs of UIC-1005 have been synthesized and the researchers have already established basic structure/activity relationship that implies a mechanism of action and strategy to isolate its binding target protein(s) from the cell. The binding protein may be a promising target for anti-cancer drug development.

UIC-1005 inhibits cell motility and cell growth in MDCK cells, as well as morphogenesis in *Xenopus laevis* embryos, both beginning at high nanomolar concentrations.

Benefits

- Specific inhibitor of cell motility may provide a much more efficacious treatment of cancer in combination with inhibitors of cell growth.
- Compound inhibits cell migration Assay allows you to screen 1K compounds/day.
- May prove to be useful in understanding and controlling cell signaling pathway leading to cell migration.

Areas of Application

- Laboratory tools
- Drug Discovery
- Cancer treatment
- Anti-cancer drug lead targeting angiogenesis
- Research
- Anti-cancer drug lead targeting metastasis
- Anti-cancer drug lead targeting cell growth

Stage of Development

- Identified compound; Known mechanism of action