Novel Antiviral Compounds to Treat Enterovirus Infections

Tech ID: 27362 / UC Case 2015-829-0

SUMMARY

Researchers in UCLA Department of Molecular & Medical Pharmacology have used a rapid, live virus assay to develop potent enterovirus inhibitors.

BACKGROUND

Human enteroviruses (EVs) are a genus of more than 110 serologically distinct, small, non-enveloped RNA viruses responsible for poliomyelitis (viral infection of the nerves), encephalitis (viral infection of the brain), acute heart failure, meningitis, and other life-threatening infections. Enteroviruses cause 10 to 15 million infections and tens of thousands of hospitalizations in the US each year. While immunization has curtailed circulation of the polioviruses in most of the world, other EVs (e.g. coxsackieviruses, echoviruses, and numbered EVs) continue to cause substantial morbidity and mortality with no effective medications to treat them. Successful development of antiviral therapeutics against large numbers of medically relevant enteroviruses could save many lives and reduce healthcare costs and burdens associated with viral infections.

INNOVATION

Researchers in UCLA's Department of Molecular & Medical Pharmacology and Department of Chemistry & Biochemistry have used a rapid, live virus assay to help design and test potent enterovirus inhibitors. The compounds are unlike any previously described inhibitors of EV replication, and exhibit very potent activity against coxsackievirus B. Using these novel analogues, the researchers designed and synthesized several EV growth inhibitors that exhibit more potent activity and broader spectrum of activity than currently available therapeutics. The antiviral agents can be altered and expanded to other members of picornavirus family, or other viruses with similar replication strategies. These antiviral agent derivatives could become the basis for development of medications to combat different classes of viral infections.

APPLICATIONS

- Treatment of various EV infections
- Development of antiviral agents for treatment of other viruses

ADVANTAGES

- Compounds exhibit potent antiviral activity
- Compounds exhibit a broad range of antiviral activity
- Compounds are applicable to large number of medically relevant enteroviruses
- Antiviral analogues have the potential to be expanded to treat other families of viruses

STATE OF DEVELOPMENT

Various novel antiviral agents have been designed and synthesized. Plaque assay and virus cytopathic effect assay will be performed on representative enteroviruses such as coxsackieviruses, echoviruses and polioviruses to evaluate the agents' antiviral activities.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	11,787,799	10/17/2023	2015-829

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OTHER INFORMATION

KEYWORDS

Enterovirus, antiviral agent, pharmacology, viral infection

CATEGORIZED AS

- **Medical**
  - Disease: Infectious Diseases
  - New Chemical Entities, Drug Leads
  - Therapeutics

RELATED CASES

2015-829-0

Germany	Issued Patent	60 2018 053 368.0	07/12/2023	2015-829
France	Issued Patent	3687529	07/12/2023	2015-829
United Kingdom	Issued Patent	3687529	07/12/2023	2015-829
United States Of America	Issued Patent	11,180,498	11/23/2021	2015-829
United States Of America	Issued Patent	11,059,817	07/13/2021	2015-829

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