25-HYDROXYCHOLESTEROL PROTECTS HOST AGAINST ZIKV INFECTION AND ITS ASSOCIATED MICROCEPHALY

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Initially isolated in 1947, Zika virus (ZIKV) has recently emerged as a significant public health concern. Sequence analysis of all 41 known ZIKV RNA open reading frames to date indicates that ZIKV has undergone significant changes in both protein and nucleotide sequences during the past half century.

A new UCLA study suggesting that the Zika virus possesses the ability to mutate rapidly, allowing the current outbreak to spread swiftly around the world, was covered April 15 by TIME, NBC News, Agence France Presse, Yahoo! News, KCBS-Channel 2, The Scientist, City News Service, My News LA, China Press, Miami’s Citizen, Genome Web, AOL’s Patch, Drug Target Review and Columbia’s El Pais; April 16 by the Economic Times, Bangkok Post and Ventures Africa; April 17 by Tech Times and Pakistan’s The Nation, and April 18 by France’s Futura Sciences, Direct Matin and Porquoi Docteur?, and Times of India, Drug Discovery and Development.
Strong Type I interferon response to ZIKV infection
Cholesterol 25 hydroxylase (CH25H) suppresses viral entry through production of 25-hydroxy cholesterol.
Cholesterol 25 hydroxylase is required for host defense against ZIKV through its hydroxylase activity.
25-Hydroxy-Cholesterol (25HC) is a potent antiviral viral agent against ZIKV infection in vitro
25HC suppresses ZIKV and host cell fusion

25HC does not affect ZIKV binding to host cells

25HC inhibits ZIKV internalization to host cells

25HC inhibits ZIKV-induced cell fusion

25HC does not affect ZIKV replication
25HC is a potent antiviral viral agent against ZIKV infection in IFNAR1 knockout mice
Pretreatment of 25HC prevents ZIKV infection in Monkey
Post-infection treatment of 25HC suppresses ZIKV infection in Monkey rhesus macaque.
CH25H is strongly induced in human brain organoid in response to ZIKV infection.
25HC is a potent antiviral viral agent against ZIKV infection in human brain organoid.
25HC can strongly suppress ZIKV infection in the brains of mouse embryos.
25HC administration to the pregnant mice can effectively prevent ZIKV-induced microcephaly in mouse embryos.
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