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Phosphonate congeners of oseltamivir, zanamivir and peramivir as effective anti-influenza drugs

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Vaccination and drugs are effective for prevention and treatment of seasonal flu. However, drugs are especially needed in pandemic influenza before new vaccines can be produced. Influenza A is the most infectious type of influenza viruses. There are 18 subtypes of hemagglutinin and 11 subtypes of neuraminidase. Avian influenza viral HA recognizes the 2,3-linked sialic acid receptor on the host cell surface, whereas human influenza viral HA recognizes the 2,6-linked sialo-glycoprotein receptors. NA is reponsible for breaking the connection between viral HA and the host cell, so that the progeny virus particle can be released to infect the surrounding cells. Pandemic influenza infection may occur due to the genetic reassortment of HA and NA. Inhibition of NA is thus a useful strategy in development of anti-influenza drugs. Zanamivir (RelenzaTM), oseltamivir (TamifluTM) and peramivir (RepiactaTM) are the NA inhibitors used for treatment of influenza. However, the on-market anti-influenza drugs still have shortcomings, such as the emergence of oseltamivir-resistance viruses, and non-oral availability of zanamivir and peramivir. In this presentation, we shall show the use of phosphonic acid as a bioisostere of carboxylic acid for developing more effective anti-influenza agents.

Biography

Jim-Min Fang received his PhD degree in 1980 from Yale University. After finishing his Postdoctoral research, he joined the Department of Chemistry, National Taiwan University (NTU), as Associated Professor in 1982. He is now an NTU Distinguished Professor and TBF Chair in Biotechnology. He also holds a joint appointment in the Genomics Research Center, Academia Sinica. His research interests are Organic Synthesis and Chemical Biology. He has published more than 250 papers.

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