

International Conference on **Influenza**

August 24-26, 2015 London, UK

Effective defense activity of honey against influenza virus infection: The combination with neuramidase inhibitors

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To control influenza virus infections are one of urgent global issues. In the replication of influenza viruses, the mutants are frequency generated because of the high mutation rate of its RNA dependent RNA polymerase. Even if effective therapeutic agents have been developed, drug-resistant viruses easily emerge and spread all over the world in the blink of an eye. Actually, a large number of resistant viruses against neuraminidase (NA) inhibitors had already been isolated from clinical specimens. In order to respond to the current situation, continuous development of the new antiviral drugs is required. We constructed an in vitro cell-based screening system for anti-influenza virus activities and detected potent anti-influenza virus infection in natural products. We found potent anti-influenza virus activities in “Honey”, and it was suggested that the active components in honey is methylglyoxal (MGO). The mechanism of Honey and MGO against influenza virus was virucidal. Thus we tested the combination activity of Honey or MGO with NA inhibitors. It was confirmed that Honey or MGO synergistically inhibit Influenza replication thus in the presence of low concentration of Honey or MGO IC₅₀ of NA inhibitors lowered up to 1/100 of NA inhibitors alone. However, our results revealed that honey has potent inhibitory activities against influenza virus infection, demonstrating a potential medicinal value as a good partner for current NA inhibitors. Combination of multiple drugs for inhibition of influenza virus replication could be effective as HAART treatment in AIDS.

Biography

Takahiro Haruyama has completed his PhD from Tsukuba University and is working as an Assistant Professor in laboratory of molecular biology of infectious agents, Graduate School of Biomedical Sciences, Nagasaki University. He has published more than 10 papers in international journals.

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