Synthesis of *C*-Linked Polysialic Acid and Bivalent Influenza Inhibitors

by

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ABSTRACT

Infections from the influenza virus cause deaths every year, mainly among the young and elderly. Some years the virus is much more virulent and the flu becomes a pandemic; of note are the 1918 Spanish flu and the 1968 Hong Kong flu. As concern for another pandemic spreads, attention has been focused on the H5N1 avian flu and, more recently, the H1N1 swine flu and how to effectively combat them. We present here a set of novel bivalent inhibitors that target both viral hemagglutinin and neuraminidase, preventing overall propagation of the virus.

Sailic acids exhibit remarkable diversity. Polysialic acids (PSA) have been found as linear $\alpha(2 \rightarrow 8)$ linked polymers in the capsules of meningitis-causing bacteria as well as some cancers, where their expression has been correlated to tumor metastasis and progression. The carbon-oxygen linkages in PSA are very labile and undergo chemical and enzymatic hydrolysis under mildy acidic conditions. As their instability facilitates both cancer propagation and bacterial infection, the synthesis of more robust carbon-carbon linked polysialic acid derivatives would have important implications for potential theurapeutics and vaccines.