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Evaluation of the antiviral potential of gemini surfactants against influenza virus H1N1

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Influenza infection is still a high risk disease affecting human health worldwide and current vaccines and drugs cannot promisingly control this infection. Gemini Surfactants have shown antioxidant, antibacterial, antifungal and antiviral properties. They include two hydrophobic chains and two polar heads which are covalently connected by a rigid or flexible linker. With any variation in their structure, they may demonstrate different hydrophobicity characteristics. In this study, the antiviral capacity of Gemini Surfactants with varying degrees of hydrophobicity was investigated. The non-cytotoxic concentration (NCTC) of the compounds was determined by MTT assay. They were used for antiviral activity against influenza A virus (IAV) in simultaneous, pre-, and post-penetration combination treatments for 1 hr incubation on MDCK cells. The virus titer and cell viabilities were determined using HA and MTT assays. The HA titer decreased between 1-5 logs in simultaneous combination treatment, between 1-4 logs in pre-penetration treatment and between 1-3 logs in post-penetration treatment. The cell viabilities were favorable in all combination treatments. Gemini Surfactants were more generally effective in simultaneous combination treatment. They exert their antiviral effects on the H1N1 influenza virus by reducing the HA titer and keeping cell survival which might be related to their hydrophobic properties. More studies on apoptotic activity of these compounds are under examination.

Biography

Mehrnaz khodsiani is a Master student at the Islamic Azad University-Tehran North Branch. She is currently doing her master project on Gemini Surfactants.

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