

ANTI-INFLUENZA PROPERTIES OF PRIMULA VERIS AQUEOUS EXTRACT IN VITRO

Sunday, September 13, 2026 6:09 PM (1 minute)

Influenza viruses remain a major public health challenge due to continuous antigenic evolution, increasing antiviral resistance, and limitations of current vaccines, highlighting the need for novel antivirals with alternative mechanisms of action. Natural products represent a promising source of antiviral compounds. We investigated the cytotoxicity, antiviral activity, combined therapy with oseltamivir, virucidal activity, and mode of action of *Primula veris* aqueous flower extract against influenza A viruses in vitro. HPLC-MS phytochemical analysis identified 16 major compounds. Antiviral activity was evaluated in MDCK cells against H3N2, H1N1, and H7N7 strains by cytopathic effect reduction microscopically and neutral red uptake assay. The extract showed low cytotoxicity (CC50 2.18 mg/ml; MTC 1.0 mg/ml) and moderate inhibition of all strains (IC50 0.346–0.368 mg/ml; SI 5.92–6.30). Combined treatment with oseltamivir produced additive and synergistic effects. Time-of-addition experiments demonstrated antiviral activity at both early (0–2 h) and late (10–12 h) stages of replication, reducing viral infectivity by 2.0 Δlg. The extract exhibited complete virucidal activity against H3N2, with a 5.0 Δlg reduction after 45 min of contact. These findings demonstrate the promising anti-influenza potential of *P. veris* aqueous extract and support further investigation of its antiviral mechanism.

Keywords

Influenza, *Primula veris*

Professional status of the speaker

PhD student

Junior scientist status

Yes, I am a junior scientist.

Registration ID

INF26-52

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Session Classification: Poster slam

Track Classification: Antivirals and Vaccines