



Evaluation of the Antiproliferative and Antiviral Potential of *Equisetum arvense* L. Extract

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Abstract

Plant-derived natural products represent an important area of research in pharmaceutical and biotechnological applications due to their bioactive compounds. *Equisetum arvense*, widely found in the America, Europe, and Asia, has a long history of use in traditional medicine. The aim of this study was to determine the composition and biological activities of the ethanolic extract of *E. arvense*. The aerial parts of *E. arvense* were ground and subjected to ultrasound-assisted extraction using 70% ethanol. The total flavonoid content of this extract was determined colorimetrically using the aluminum chloride method. Cytotoxic effects were analyzed using the MTT assay on two different cancer cell lines. In addition, antiviral activity potential was analyzed *in ovo* using embryonated chicken eggs against the Infectious Bronchitis virus. The extract contained 1.421±0.11 mg catechin equivalents (CE)/g of total flavonoids. Cytotoxicity analyses showed that the extract reduced cell viability in a dose- and time-dependent manner. In particular, the extract exhibited the strongest antiproliferative effect in HeLa cells, with an IC₅₀ of 554.32±28.89 µg/mL at 72 hours. Similarly, in T24 cells, the IC₅₀ was 582.57±24.03 µg/mL at 72 hours. The extract demonstrated significant activity, achieving 73.43%–88.28% viral inhibition at concentrations ranging from 2.5 to 5 mg/kg. The results show that *E. arvense* ethanol extract is a significant natural bioactive source with antiproliferative and antiviral potential. The findings suggest that it may be evaluated for pharmaceutical and biotechnological applications.

Keywords: *Equisetum arvense*, total flavonoid content, cytotoxicity, antiviral activity

