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« Natural Bioactive Compounds from Arisarum vulgare Tubers: Chemical Characterization and Anticancer Evaluation for Biomedical Applications»

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Natural Bioactive Compounds from *Arisarum vulgare* Tubers: Chemical Characterization and Anticancer Evaluation for Biomedical Applications

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Abstract

The search for novel biomaterials and bioactive compounds for use in healthcare and medical product development is a growing priority in biomedical sciences. Among natural sources, medicinal plants offer promising alternatives due to their safety profile, therapeutic potential and cultural relevance. *Arisarum vulgare*, traditionally used in Algerian medicine for cancer treatment, represents a valuable candidate for natural product-based biomedical innovation.

This study aims to investigate the anticancer potential of an aqueous extract of *Arisarum vulgare* tubers and evaluate its potential integration into natural biomaterial platforms or therapeutic strategies. Phytochemical screening revealed the presence of key bioactive classes such as phenolics, flavonoids and alkaloids. Cytotoxicity assays were conducted on HT-29 (colorectal cancer) and Hep G2 [HEPG2] (liver cancer) cell lines using the MTT method, with 5-Fluorouracil (5-FU) serving as a reference drug.

The extract exhibited a dose- and time-dependent decrease in cell viability, with IC₅₀ values demonstrating significant antiproliferative effects. After 48 hours of treatment, a pronounced reduction in cell survival was observed at higher concentrations (50–100 µg/mL), comparable to that of 5-FU. Statistical analysis confirmed the efficacy of the extract, highlighting its potential for further biomedical exploration.

These results provide scientific evidence for the traditional use of *Arisarum vulgare*, and support its relevance as a source of natural bioactive agents that may be further investigated for inclusion in biomedical materials, formulations, or healthcare product development aimed at cancer therapy.

Keywords : *Arisarum vulgare*, natural biomaterials, anticancer activity, bioactive compounds, MTT assay, biomedical applications, traditional medicine.