

عنوان مقاله:

Toxicity Assessment of Euphorbia esula L. Extracts on HCT116, SW620, HEK293 Cell Lines, Artemia salina Larvae, and Its Bactericidal Effects

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خلاصه مقاله:

The aim of this study is to evaluate the potential toxicity of acetonic and methanolic extracts derived from the Euphorbia esula L. plant on various cell lines of human colorectal cancer (HCT116 and SW620), human embryonic kidney normal cells (HEK293), Artemia salina larvae, and its bactericidal effects. The cytotoxic effect of E. esula extracts on cell lines was performed using the MTT assay. In vitro toxicity and biocompatibility of extracts were also evaluated on A. salina and red blood cells by hemolysis test, respectively. The ability of the extracts to inhibit bacterial growth was examined by using the disc diffusion method, as well as the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) using the microtiter broth dilution method. Results showed acetonic extract contains the highest concentration of flavonoid ($16.17 \mu\text{g Qu/mg}$) and phenol ($34.84 \mu\text{g GA/mg}$) compared to methanolic extract. The anti-proliferative effects of acetonic extract had the highest effect on HCT116 and HEK293 with IC_{50} of $64.80 \mu\text{g/mL}$ and $47.82 \mu\text{g/mL}$ at 72h, respectively. The hemolysis degree of the methanolic extracts was $<2\%$ at $400 \mu\text{g/mL}$. LC_{50} for the acetonic and methanolic extracts exhibited moderate and low toxicities on the brine shrimp larvae, with LC_{50} of $381.969 \mu\text{g/mL}$ and $1905.77 \mu\text{g/mL}$, respectively. The bactericidal effect of 50 mg/mL acetonic extracts showed a clear zone inhibitory growth on Staphylococcus aureus and Klebsiella pneumoniae with 34 mm and 35 mm at the MIC and MBC values of 1000 and 2000 mg/mL, respectively. These findings could help to elucidate the anti-tumor, anti-bacterial, and toxic properties of E. esula extracts.

کلمات کلیدی:

Antibacterial assay, Artemia salina, Brine shrimp, Colorectal cancer, Euphorbia esula, Selectivity index

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