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## Methanolic extract leaf of *Scabiosa atropurpurea* promote an anticancer activity *in vitro* and demonstrate significant impact on tumor growth *in vivo*

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Scabiosa atropurpurea (S.atrp) was extracted with methanol then the chemical composition was identified by HPLC MS/MS (High Performance Liquid Chromatography Mass spectrometry). The current study aims to investigate the multidrug resistance (MDR) of colorectal cancer cells which is a multidimensional problem involving several mechanisms and targets. This study demonstrates that Methanolic extract from S.atrop, which contains flavonoids, phenolic acids and saponins has the ability to inhibit cell proliferation and reverse resistance of some colorectal cancer cells (Caco-2, HCT-116 and CT26) to the cisplatin chemotherapy (CDDP), by induction of apoptosis. This extract promoted G2/M and S arrest at 48h and it also overcame P- gp/MDR1 and MRP1 activities in a concentration-dependent. Moreover, it inhibited the activity of the drug modifying enzyme GST. Besides, this study evaluated the antitumoral effect of this extract. BALB/c mice were subcutaneously inoculated with CT-26 cells, then treated intra-peritoneally after 7 days with the methanolic extract for 21 days. Our results showed that S.atrop could significantly inhibit the tumor growth and possess a synergistic antitumoral effect with the CDDP . This effect caused a significant reduction in the serum levels of aspartate transaminase, alanine transaminase and creatinine in comparison to the positive control. These results suggest that the methanolic extract of S.atrop might contain phytoconstituents endowed with antitumoral properties, which could protect against the colorectal cancer.