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Abstract

Ethnopharmacological relevance

Traditional Chinese medicine has been utilized for the treatment of cancer. Jianpi Jiedu decoction (JPJD), a traditional Chinese medicine formula, has been used for the treatment of colorectal cancer for decades. However, the underlying molecular mechanistic basis for the effect of JPJD on colorectal cancer is poorly understood.

Aim of the study

The aim of this study was to identify the effects of JPJD on human colon cancer cells *in vitro* as well as *in vivo* and to investigate the mechanistic basis for the anticancer effect of JPJD.

Materials and methods

The *in vitro* antitumor activity of JPJD was assessed by MTT assay, flow cytometric analysis, wound-healing assay, transwell assays, and tube formation assays in order to assess cell activity, apoptosis, migration, invasion, and angiogenesis, respectively. The anticancer properties of JPJD *in vivo* were assessed by immunohistochemistry in a nude mouse xenograft model of HCT116 cells. In addition, the level of mTOR/HIF-1α/VEGF signaling pathway proteins in HCT116 cells and tumor tissue was evaluated by immunoblotting.

Results

In vitro, JPJD significantly inhibited colorectal cancer cell lines viability and proliferation. Flow cytometry analysis demonstrated JPJD to induce HCT116 cell apoptosis. Additionally, JPJD effectively suppressed tumor cell migration, invasion, and angiogenesis by inhibiting the mTOR/HIF-1α/VEGF signaling pathway. *In vivo*,