

生脉注射液对不同化疗药物的增敏作用

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摘要: **目的** 研究生脉注射液对不同化疗药物的增敏作用, 并初步探讨其机制。**方法** 通过 MTT 法测定生脉注射液对于不同临床典型化疗药物的增敏效果, 通过流式细胞术测定生脉注射液联合表阿霉素对人肝癌 HepG-2 细胞周期和细胞凋亡的影响; RT-PCR 方法检测生脉注射液对于多药耐药基因 MDR-1 表达的影响。**结果** 生脉注射液 (30 μ L/mL) 联合吉西他滨、顺铂、紫杉醇和表阿霉素对不同肿瘤细胞 A549、SGC-7901、MCF-7 和 HepG-2 具有药物增敏作用, 其中联合表阿霉素作用效果最为显著, 使肝癌 HepG-2 细胞对表阿霉素的敏感性提高 16 倍。流式细胞仪和 RT-PCR 结果显示, 生脉注射液 (30 μ L/mL) 不影响肿瘤细胞的周期和凋亡, 但与表阿霉素联用在促进表阿霉素改变 HepG-2 细胞周期和诱导凋亡的同时, 能够降低 MDR-1 基因的表达水平。**结论** 生脉注射液联合不同化疗药物对多种肿瘤细胞均有明显的增敏作用, 其作用机制与降低 MDR-1 基因表达水平及其编码的具有药物外排作用的 P-糖蛋白的表达有关。

关键词: 生脉注射液; 化疗药物; 增敏作用; 肿瘤细胞; MDR-1

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Chemo-sensitivity enhancing effects of Shengmai Injection on various chemotherapeutic drugs

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Abstract: Objective To investigate the chemo-sensitivity enhancing effect and its major active mechanism of Shengmai Injection (SMI). **Methods** MTT assay was used to determine the chemo-sensitivity enhancing activity of SMI combined with various current-used chemotherapeutic drugs. Flow cytometry was conducted to determine the effect of Epirubicin combined with SMI on the cell cycle distribution and apoptotic cell death, and the mRNA expression level of MDR-1 gene was determined by RT-PCR. **Results** SMI (30 μ L/mL) combined with gemcitabine, cisplatin, paclitaxel, and Epirubicin exhibited the potent antiproliferative effects on human lung carcinoma A549, gastric carcinoma SGC-7901, breast carcinoma MCF-7, and hepatocellular carcinoma HepG-2 cell lines, respectively. SMI showed the most significant enhancing effects on HepG-2 cells in combination with Epirubicin, and the sensitivity of HepG-2 to Epirubicin was increased by 16 fold. Whereas SMI (30 μ L/mL) alone did not affect the cell cycle distribution and apoptosis of HepG-2 cells, it enhanced the cellular responses when combined with Epirubicin together with a down-regulated mRNA level of MDR-1 gene. **Conclusion** SMI combined with the different chemotherapeutic drugs could enhance the sensitivity of cancer cells significantly via down-regulating the mRNA expression level of MDR-1 and the expression of P-glycoprotein with the excretion of drugs.

Key words: Shengmai Injection; chemotherapeutic drug; chemo-sensitivity enhancing effect; tumor cells; MDR-1

生脉散由红参 (100 g)、麦冬 (312 g)、五味子 (156 g) 组成, 生脉注射液 (Shengmai Injection,

SMI) 是从红参、麦冬、五味子中提取有效成分制成的中药注射液, 现收载于卫生部药品标准《中药

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