蛇床子素对胃BGC-823细胞的体外放疗增敏作用的实验研究

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Title: Enhancement of radiation effects by Osthole on human gastric BGC-823 cell line in vitro

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摘要: 目的：研究中药单体蛇床子素（Ost）对胃BGC-823细胞的体外放疗增敏作用。方法：采用MTT法检测单药及联合放疗对BGC-823细胞的作用；细胞克隆形成实验检测Ost对BGC-823细胞的放疗增敏作用；流式细胞术分析Ost及放疗对BGC-823细胞的细胞周期及细胞凋亡的影响。结果：Ost对BGC-823细胞具有增殖抑制作用；低细胞毒剂量的Ost（15 μg/ml）对BGC-823细胞具有放疗增敏作用，经单击多靶模型拟合后，Ost联合放疗组细胞存活曲线较单纯放疗组左移，D0、Dq值变小，放疗增敏比SER=1.64。结论：低细胞毒剂量的Ost（15 μg/ml）对BGC-823细胞具有放疗增敏作用，其机制可能与增加放疗诱导的细胞凋亡，引起放疗敏感时相G1期细胞阻滞，减少放疗相对抗拒时相S期细胞比例相关。

Abstract: Objective：To study the enhancement of radiation effects by Osthole on gastric BGC-823 cells in vitro.Methods：MTT assay detected the effects of single drug and combined radiotherapy on BGC-823 cells.Cell clone formation assay detected the enhancement of radiation effects by Ost on BGC-823 cells.Flow cytometry analyzed the effects of Ost and radiotherapy on cell cycle and apoptosis in BGC-823 cells.Results：Ost could inhibit the proliferation of BGC-823 cells.Low cytotoxic dose of Ost (15 μg/ml) had radiotherapy sensitization effect on BGC-823 cells.After single-click multi-target model fitting，the cell surviving fraction of Ost combined radiotherapy group was shifted to the left，compared with the radiotherapy group，and D0 and Dq values were reduced，and the radiotherapy sensitization ratio SER=1.64.Conclusion：Low cytotoxic dose of Ost (15 μg/ml) has radiotherapy sensitization effect on BGC-823 cells.The mechanism may be related to increasing radiation-induced apoptosis，causing cell block in phase G1 when there is radiotherapy sensitization，and reducing the proportion of cells in phase S when there is radiotherapy resistance.

参考文献/REFERENCES

[1] SHEN Xiaocheng.Effects of preoperative concurrent radiochemotherapy on the cancer cell infiltration and angiogenesis in local advanced gastric cancer lesions [J] .Journal of Hainan Medical University，2017，23(22)：3100-3103.[沈小程.术前同步放化疗对局部晚期胃癌病灶内癌细胞浸润性生长及血管新生的影响 [J] .海南医学院学报，2017，23(22)：3100-3103.]
[2]LIU Lijie，GAO Liming，ZHANG Shuang，et al.Efficacy of nimotuzumab in combination with concurrent chemoradiotherapy for treatment of Her-2 negative local advanced gastric cancer [J] .J Chin Oncol，2016，22(9)：713-717.[刘立杰，高立明，张双，等.尼妥珠单抗联合同步放化疗治疗Her-2阴性局部晚期胃癌疗效观察 [J] .肿瘤学杂志，2016，22(9)：713-717.]
[3]Hundahl SA，Phillips JL，Menck H R，et al．The national CaData base report on poor survival of U.S．gastric carcinoma tients treated with gastrectomy：Fifth edition american joint cmittee on cancer staging．Proximal disease，and the"diffdisease"hypothesis [J] ．Cancer，2000，88(4)：921-932.
[4]Macdonald JS，Smalley SR，Benedetti J，et al.Chemoradiotherapy after surgery compared with surgery alone for adenocarcinoma of the stomach or gastroesophageal junction [J] .N Engl J Med，2001，345(10)：725.
[5]Lambrecht M，Nevens D，Nuyts S.Intensity-modulatedradiotherapy vs.parotid-sparing 3D conformal

radiotherapy.Effect onoutcome and and toxicity in locally advanced head and neck cancer［J］.Strahlenther Onkol，2013，189(3)：223-229.
[6]YANG Yun，YANG Liu，LI Xiaojing，et al.Osthole inhibits cell proliferation by promoting apoptosis and cell cycle arrest in gastric cancer cell line N87［J］.Chinese Journal of Biochemistry and Molecular Biology，2019，35(1)：74-80.［杨赟，杨柳，李晓静，等.蛇床子素通过促进胃癌细胞 N87 凋亡和细胞周期阻滞而抑制细胞增殖［J］.中国生物化学与分子生物学报，2019，35(1)：74-80.］
[7]JIA Tingyin，LI Haochao，QIAO Zeqiang，et al.Osthole inhibits proliferation and induces apoptosis of hepatocellular carcinoma cell line HepG2 via upregulating PTEN［J］.Chin J Immunol，2019，35(2)：192-196.［贾廷印，李好朝，乔泽强，等.蛇床子素通过上调抑癌基因PTEN抑制肝癌细胞HepG2增殖并促进细胞凋亡［J］.中国免疫学杂志，2019，35(2)：192-196.］
[8]ZHU Youshan，SONG Wei，ZHAO Ying，et al.Study on the induced apoptosis of cholangiocarcinoma QBC939 cells by Osthole［J］.Guangdong Medical Journal，2018，39(4)：516-520.［朱幼姗，宋巍，赵莹，等.蛇床子素对胆管癌 QBC939 细胞的诱导凋亡研究［J］.广东医学，2018，39(4)：516-520.］
[9]Xu XM，Zhang ML，Zhang Y，et al.Osthole induces lung cancer cell apoptosis through inhibition of inhibitor of apoptosis family proteins［J］.Oncol Lett，2016，12(5)：3779-3784.
[10]Liu L，Mao J，Wang Q，et al.In vitro anticancer activities of osthole against renal cell carcinoma cells［J］.Biomed Pharmacother，2017(94)：1020-1027.
[11]Zhu X，Song X，Xie K，et al.Osthole induces apoptosis and suppresses proliferation via the PI3K/Akt pathway in intrahepatic cholangiocarcinoma［J］.Int J Mol Med，2017，40(4)：1143-1151.
[12]MAO Jialei，HU Jing，QIAN Xiaoping，et al.The analysis of interactions between osthole and fluorouracil using median-effect principle［J］.Oncology Progress，2014，12（3）：278-284.［毛佳蕾，胡静，钱晓萍，等.利用中效原理评价蛇床子素与5-FU相互作用［J］.癌症进展，2014，12（3）：278-284.］
[13]Puck TT，Marcus PI，Cieciura SJ.Clonal growth of mammalian cells in vitro growth characteristics of colonies from single Hela cells with and without a "feeder" layer［J］.The Journal of Experimental Medicine，1956，103(2)：273-284.
[14]Puck TT，Fisher HW.Genetics of somatic mammalian cells I.demonstration of the existence of mutants with different growth requirements in a human cancer cell strain (Hela)［J］.The Journal of Experimental Medicine，1956，104(3)：427-434.
[15]Puck TT，Marcus PI.Action of X-rays on mammalian cells［J］.The Journal of Experimental Medicine，1956，103(5)：653-666.
[16]Tao LY，Li JY.Research ABCB1-mediated multidrug resistance activity inhibits oxidation hematoxylin［J］.Liaoning Medical Journal，2011，32(3)：217-220.

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