

论著

## 荷包牡丹碱对人肺癌A549细胞生长及端粒酶活性的抑制作用

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**摘要 目的** 探讨荷包牡丹碱对人肺癌A549细胞生长的抑制作用及其作用机制。**方法** A549细胞加入荷包牡丹碱0~200  $\mu\text{mol} \cdot \text{L}^{-1}$ 分别作用24, 48和72 h, MTT法测定A549细胞的生长抑制作用。荷包牡丹碱0~20  $\mu\text{mol} \cdot \text{L}^{-1}$ 作用72 h, 端粒重复序列扩增(TRAP)法测定端粒酶活性。变温紫外法检测荷包牡丹碱9  $\mu\text{mol} \cdot \text{L}^{-1}$ 对端粒酶G-四链体的稳定作用。**结果** 荷包牡丹碱25, 50, 100和200  $\mu\text{mol} \cdot \text{L}^{-1}$ 作用细胞72 h后的抑制率分别为33.4%, 88.2%, 88.6%和89.4%, 明显高于正常对照组细胞 ( $P < 0.05$ ), 并具有量效( $r=0.906$ ,  $P < 0.05$ )和时效( $r=0.949$ ,  $P < 0.05$ )性。与正常对照组相比, 荷包牡丹碱5, 10, 15和25  $\mu\text{mol} \cdot \text{L}^{-1}$ 可有效抑制A549细胞端粒酶的活性 ( $P < 0.05$ ), 相对TRAP端粒酶活性从正常对照组的 $1.471 \pm 0.102$ 分别降低为 $1.093 \pm 0.054$ ,  $1.013 \pm 0.016$ ,  $0.554 \pm 0.034$ ,  $0.365 \pm 0.081$  ( $P < 0.05$ )。荷包牡丹碱9  $\mu\text{mol} \cdot \text{L}^{-1}$ 使G-四链体的熔点值从正常对照组的48℃提高到54℃。**结论** 荷包牡丹碱可以通过稳定G-四链体结构, 抑制端粒酶活性, 有效抑制人肺腺癌细胞A549的生长。

**关键词** [荷包牡丹碱](#) [A549细胞](#) [端粒酶](#) [G-四链体](#)

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## Inhibitory effect of dicentrine on human lung cancer cell line A549 proliferation and on telomerase activity

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### Abstract

**OBJECTIVE** To investigate inhibitory effect of dicentrine on human lung cancer cell line A549 and its mechanism. **METHODS** Growth inhibition of dicentrine 0-200  $\mu\text{mol} \cdot \text{L}^{-1}$  on human lung cancer cell line A549 was examined by MTT colorimetric assay. Inhibitory effect of dicentrine 0-20  $\text{mol} \cdot \text{L}^{-1}$  on telomerase was examined by telomerase repeat amplification protocol(TRAP). Moreover, the anti-tumor mechanism of dicentrine 9  $\mu\text{mol} \cdot \text{L}^{-1}$  was explored by using UV-vis spectra experiment to examine G-quadruplex stability. **RESULTS** The inhibitory effect of the dicentrine on A549 cells increased in a concentration ( $r=0.906$ ) and time-dependent ( $r=0.949$ ) manner ( $P < 0.05$ ), tumor inhibitory rates of dicentrine 25, 50, 100, 200  $\mu\text{mol} \cdot \text{L}^{-1}$  on A549 tumor were 33.4%, 88.2%, 88.6% and 89.4% at 72 h, respectively. Dicentrine could significantly decreased telomerase activity ( $P < 0.05$ ); from results of G-quadruplex stability experiments, the quadruplex structure showed increasing  $T_m$  values with dicentrine, value of  $T_m$  from 48℃ up to 54℃. **CONCLUSION** Dicentrine can significantly decrease telomerase activity by stabilizing G-quadruplex structure. Accordingly, it can significantly inhibit the proliferation of A549 cells.

**Key words** [dicentrine](#) [human lung cancer cell line A549](#) [telomerase](#) [G- quadruplex](#)

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