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论文

中药大黄的生化学研究.XIX.蒽醌衍生物对线粒体呼吸链的抑制部位

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摘要：

本实验结果表明:大黄素、大黄酸和芦荟大黄素是线粒体呼吸链电子传递的抑制剂。(1)三药对NADH脱氢酶有不同程度的抑制作用,(2)大黄素对琥珀酸脱氢酶有较强的抑制作用,而大黄酸和芦荟大黄素对此酶仅有轻微的抑制作用;(3)三药对辅酶Q-细胞色素C还原酶及细胞色素C氧化酶也仅有轻微的抑制作用;(4)动力学观察表明:三药对NADH脱氢酶的抑制均为竞争性的。

关键词： 大黄酸 大黄素 芦荟大黄素 大黄

BIOCHEMICAL STUDY OF CHINESE RHUBARB.XIX.LOCALIZATION OF INHIBITION OF ANTHRAQUINONE DERIVATIVES ON THE MITOCHONDRIAL RESPIRATORY CHAIN

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Abstract:

The effects of anthraquinone derivatives on the four electron transport complexes of mitochondron have been investigated. The results showed that emodin, rhein and aloe-emodin acted as inhibitors of some enzymes of the mitochondrial electron transport system. (1) Rhein, emodin and aloe-emodin specifically interfered with the redox function of the NADH dehydrogenase (complex Ⅰ). Rhein, emodin and aloe-emodin showed strongest, moderate and weak inhibition, respectively. The concentrations for 50% inhibition were 22 *μg*/ml, 38 *μg*/ml and 72 *μg*/ml, respectively. (2) The kinetics of the inhibition of rhein, emodin and aloeemodin on the membrane-bound NADH dehydrogenase was studied. The results indicated that the inhibition was competitive with respect to substrate, with Ki values of 35 μmol, 60 μmol and 110 *μ*mol at 25℃, respectively. (3) Emodin significantly inhibited the activity of succinate dehydrogenase (complex Ⅱ). The concentration for 50% inhibition was 55 *μg*/ml, but aloe-emodin and rhein showed no marked effect on this enzyme. (4) Emodin, rhein and aloe-emodin showed no significant effect on coenzyme Q-cytochrome C reductase (complex Ⅲ) and cytochrome C oxidase (Complex Ⅳ). The results were in agreement with previous finding that emodin showed strongest antibacterial and anticancer activities, while rhein showed moderate effect and aloe-emodin showed only weak effect. It appears that inhibition of mitochondrial respiratory chain is one of the mechanisms of antibacterial and anticancer actions of Chinese rhubarb.

Keywords: Emodin Aloe-emodin Rhubarb Rhein

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参考文献：

本刊中的类似文章

1．林雅军;黄云虹;甄永占;刘秀均;甄永苏.赖氨大黄酸通过抑制HER-2信号通路诱导乳腺癌SK-Br-3细胞凋亡[J]. 药学学报, 2008,43(11): 1099-1105

2．黄云虹;甄永苏;.大黄酸诱导肿瘤细胞凋亡及与丝裂霉素的协同作用[J]. 药学学报, 2001,36(5): 334-338

3．尚小玉;袁倬斌.环糊精修饰混合胶束电动色谱法测定大黄中6种有效成分[J]. 药学学报, 2002,37(10): 798-801

4．许旭;董晓渭;毛平.小檗碱与大黄酸沉淀作用的毛细管电泳法[J]. 药学学报, 2003,38(10): 779-782
5．宗玉英;余满堂;朱志强;车镇涛.胶束电动毛细管色谱法分离和测定几种大黄含量[J]. 药学学报, 1995,30(8): 594-598
6．谭正怀;沈映君;赵军宁;李杭翼;张杰.大黄酸对人肾小球系膜细胞功能的影响[J]. 药学学报, 2004,39(11): 881-886

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