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论著

瑞香素对恶性疟原虫细胞色素C氧化酶及核糖核酸还原酶活性的影响

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摘要
目的 体外测定瑞香素对恶性疟原虫细胞色素C氧化酶（COX）及核糖核酸还原酶（RNR）活性的影响。 方法 Trager & Jensen法体外培养恶性疟原虫FCC1/HN分离株，超声波破碎恶性疟原虫提取总蛋白，用紫外分光光度计检测瑞香素与瑞香素-Fe复合物在不同作用时间和不同作用浓度对恶性疟原虫COX活性的影响，以电子自旋共振法检测经瑞香素与瑞香素-Fe复合物作用1、2、3和4 h后，恶性疟原虫酪氨酸（Tyr）自由基的量以反映恶性疟原虫RNR的活性。 结果 体外同步培养的恶性疟原虫经瑞香素（100 μmol/L）作用2、4、8和12 h后，COX活性分别被抑制了0、6%、73%和80%；在瑞香素浓度为0.1、1、100和1 000 μmol/L，作用6 h后，COX活性分别被抑制3%、31%、53%和84%；而瑞香素-Fe复合物对COX的影响几乎消失。经瑞香素（100 μmol/L）作用1、2、3和4 h后RNR活性分别被抑制7%、51%、69%和75%；在瑞香素浓度为0.1、1、100和1 000 μmol/L，作用6 h后，RNR活性分别被抑制3%、31%、58%和93%；而瑞香素-Fe复合物作用6 h后RNR活性分别被抑制8%、6%、11%和9%。 结论 在体外瑞香素可显著降低恶性疟原虫的细胞色素C氧化酶（COX）及核糖核酸还原酶（RNR）活性。

关键词 瑞香素 恶性疟原虫 细胞色素C氧化酶 核糖核酸还原酶
分类号

In Vitro Effect of Daphnetin on Cytochrome C Oxidase and Ribonucleotide Reductase of *Plasmodium falciparum*

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Abstract
Objective To test the *in vitro* effect of daphnetin on cytochrome C oxidase （COX） and ribonucleotide reductase （RNR） activity of *Plasmodium falciparum*. Methods *P. falciparum* （FCC1/HN） was cultured *in vitro* using the method of Trager and Jensen. The effect of daphnetin and daphnetin-Fe complex on COX and RNR activity of *P.falciparum* was tested by ultraviolet spectrophotometer and electron spin resonance （ESR） respectively. Result The parasites synchronized with sorbitol *in vitro* was treated by daphnetin and daphnetin-Fe complex. The inhibition level of the COX activity by daphnetin after being treated for 2， 4， 8 and 12 h were 0.6%， 73% and 80% respectively and the inhibition level by daphnetin at different concentrations （0.1， 1， 100 and 1mmol/L） for 6h was 3%， 31%， 53% and 84%， respectively. No considerable effect was observed on the COX activity of P.falciparum treated with daphnetin-Fe complex. The tyrosyl free radical was tested to reflect the RNR activity of P.falciparum at various times by ESR. The inhibition level by daphnetin for 1， 2， 3 and 4 h were 7%， 51%， 69% and 75% respectively， while the values treated by daphnetin-Fe complex were 8%， 6%， 11% and 9% respectively. The inhibition level by daphnetin at different concentrations （0.1， 1， 100 and 1 mmol/L） for 6 h was 3%， 31%， 58% and 93% respectively and while the values treated by daphnetin-Fe complex were 8%， 6%， 11% and 9%. Conclusion Daphnetin significantly reduces the COX and RNR activities of *Plasmodium falciparum in vitro*.

Key words Daphnetin；*Plasmodium falciparum*；Cytochrome C oxidase （COX）；Ribonucleotide reductase （RNR）

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