

论文

基质金属蛋白酶与天然黄酮醇类药物抑制剂识别机理的光谱学研究

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摘要:

基质金属蛋白酶(Matrix metalloproteinases, MMPs)是肿瘤细胞对正常组织的侵袭和转移过程中重要的调节因子, 可以水解多种细胞内、细胞外及细胞膜上的底物, 因而影响着多种细胞的行为. 当MMPs表达异常时, 很多种病理会改变甚至恶化, 因此, MMPs已成为近年来备受关注的一类抗肿瘤药物靶标蛋白酶. 选用MMPs的几种天然黄酮醇类药物小分子抑制剂, 利用荧光滴定光谱和紫外-可见(UV-Vis)吸收光谱相结合, 研究了它们与MMPs家族成员之一MMP-16之间的分子识别和作用机理. 研究结果表明, 这几种黄酮醇化合物不但对MMP-16显示出了较强的结合能力, 而且在结合模式、结合比和抗氧化性能等多方面都表现出了很强的结构-性能差异.

关键词: 基质金属蛋白酶 天然药物抑制剂 分子识别和机理 黄酮醇

Spectroscopic Study on the Recognition Mechanism Between Matrix Metalloproteinase-16 and Natural Flavonoids

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Abstract:

Acting on a broad spectrum of extracellular, intracellular, and membrane-associated substrates, the matrix metalloproteinases(MMPs) are critical to the biological processes of organisms. And when aberrantly expressed, many pathological conditions may be born or exacerbated. Several natural flavonoids were used as the inhibitors of MMP-16, and the fluorometric titration and UV-Vis absorption spectra were performed to reveal the recognition and inhibition mechanism between them, large differences at binding model, stoichiometry and antioxidation were clarified between them.

Keywords: Matrix metalloproteinases(MMPs) Natural medicine inhibitor Molecular recognition and mechanism Flavonoids

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