

火菇素的圆二色性与溶液二级结构

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摘要 为了弄清火菇素蛋白的结构与功能的关系并揭示抗癌机理,使其更好地发挥临床作用,测定了火菇素的圆二色性,并用蛋白质二级结构解析程序分析了火菇素的溶液二级结构。火菇素远紫外圆二色性的研究表明,其水溶液在208nm处表现为宽大负峰,最大平均残基摩尔椭圆度 $[\theta]_{208} = -6574 \text{ deg} \cdot \text{cm}^2 \cdot \text{dmol}^{-1}$,在223nm处为肩,经二级结构解析程序计算分析,火菇素的二级结构和二硫键和芳香氨基酸对火菇素圆二色性的贡献分别为77.4%和22.6%,二级结构的组成为: α -螺旋19.7%, β -折叠和 β -转角50.1%,无规卷曲和 γ -转角30.2%。火菇素二级结构对pH,SDS和乙醇有一定的稳定性,在pH4.6~9.4范围内,火菇素的结构几乎不发生变化,但在碱性太强的环境中火菇素发生不可逆变性,火菇素对热变性很敏感。

关键词 [火菇素](#) [圆二色性](#) [溶液](#) [结构](#)

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Circular dichroism spectra and secondary structures in solution of flammulin

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Abstract In order to reveal the relationship between the structure and the function of flammulin and to make best use of this antitumor substance, the secondary structures of flammulin are studied by the circular dichroism spectroscopy. The far UV circular dichroism spectra of flammulin show a negative peak at 208 nm, with $[\theta]_{208} = -6574 \text{ deg} \cdot \text{cm}^2 \cdot \text{dmol}^{-1}$, and a negative shoulder at 223 nm. Based on computer analysis using CCA program, the secondary structure is assigned as α -helix 19.7%, β -pleated sheet and β -turn 50.1%, random coil and γ -turn 30.2%. About 77.4% of total CD spectra are contributed by the secondary structures, and 22.6% are contributed by disulphide bond and aromatic amino acid. The near UV circular dichroism spectra of flammulin give a broad negative peak at 268 nm. The secondary structures are relatively stable to pH and SDS. However the protein is sensitive to heat. The structure of flammulin remains well over a wide pH range (from 4.6 to 9.4). But more alkaline pH condition can denature flammulin irreversibly.

Key words [CIRCULAR DICHROISM](#) [SOLUTION](#) [STRUCTURE](#)

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