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具有合成核酸活性的多肽 **I: C**-端去四肽和去六肽核糖核酸酶**A**及其水解和合成活性

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摘要 为寻找一个比天然RNase A分子结构更简单, 但较之具有突出的合成活性的核酸酶模型, 首先由RNase A出发, 从C-端切去不同长度的肽段, 获得了比RNase A仅有微弱水解活性但有更强合成活性的C-端去四肽和去六肽核糖核酸酶A(RAl-120和RAl-118)两种降解产物. 研究了RAl-120和RAl-118的水解活性和合成活性, 得出结论认为RNase的His119对其水解活性是重要但并非必要角色, 对其合成活性既非重要又非必要.

关键词 分子结构 水解 活性 多肽 核糖核酸酶 国家自然科学基金

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Study on nucleic acid-synthesizing polypeptides I: C-Terminal destetrapeptido- and deshexapeptido-ribonucleases A and their hydrolytic and synthetic activities

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Abstract C-terminal destetetrapeptido- and deshexapeptido-RNases A (RA1-120 and RA1-118) were prepared from RNase A by peptic digestion and from RA1-120 by limited carboxypeptidase A action, resp. Both RA1-120 and RA1-118 have definite though significantly weaker hydrolytic activities, especially very weak ribonucleoside 2',3'-cyclophosphate hydrolysis activities, but notably higher synthetic activities than those of natural RNase A. At room temperature, the relative initial velocities of the hydrolysis of uridine 2',3'-cyclophosphate (I) by RNase A, RA1-120, and RA1-118 were 100, 2, and 0.7 resp. The relative synthesis activities of RNase A, RA1-120, and RA1-118 at -15?were 100, 120, and 167, when I and 3'-cytidylate were used as substrates and the yields of UpC enzymically synthesized in 24 h at -15?were compared. Thus, histidine 119 of RNase A mol. is important but not necessary for its hydrolytic activity and is neither important nor necessary for its synthetic activity.

Key words MOLECULAR STRUCTURE HYDROLYSIS ACTIVITY POLYPEPTIDE RIBONUCLEASE NSFC

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