

The pro-apoptotic action of new analogs of the insect gonadoinhibiting peptide *Neb-colloostatin*: synthesis and structure-activity studies.

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Streszczenie

Neb-colloostatin (SIVPLGLPVPIGPIVVGPR), an insect oostatic factor found in the ovaries of the flesh fly *Neobellieria bullata*, strongly induces apoptosis in insect haemocytes. To explain the role of Ser(1) and Pro(4) residues of Neb-colloostatin in the pro-apoptotic activity of this peptide, the synthesis of a series of analogues was performed, such as: [Ac-Ser(1)]- (1), [D-Ser(1)]- (2), [Thr(1)]- (3), [Asp(1)]- (4), [Glu(1)]- (5), [Gln(1)]- (6), [Ala(1)]- (7), [Val(1)]- (8), [D-Pro(4)]-(9), [Hyp(4)]- (10), [Acp(4)]- (11), [Ach(4)]- (12), [Ala(4)]- (13), [Ile(4)]- (14), and [Val(4)]- colloostatin (15). All peptides were bioassayed in vivo for the pro-apoptotic action on haemocytes of *Tenebrio molitor*. Additionally, the structural properties of Neb-colloostatin and its analogues were examined by the circular dichroism in water and methanol. Peptides 1, 4, 5, 7, 8, 10, 12, 14, and 15 strongly induce *T. molitor* haemocytes to undergo apoptosis and they show about 120-230% of the Neb-colloostatin activity at a dose of 1nM. The CD conformational studies show that the investigated peptides seem to prefer the unordered conformation.

Słowa kluczowe

Neb-colloostatin, Apoptosis, haemocytes, Insect peptide, Haemocytotropic activity

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