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Novel biological effects of alloferon and its selected analogues: structure-activity study.

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Streszczenie

The subject of this paper is a search for new biological properties of alloferon (H-His-Gly-Val-Ser-Gly-His-Gly-Gln-His-Gly-Val-His-Gly-OH) and a series of its analogues. The studies on structure/activity relationship in alloferon, the synthesis of a series of 28 analogues were performed. The analogues were modified at position 1 or 6, and other were oligopeptides with a shortened peptide sequence. Biological effects of the peptides were evaluated by the pro-apoptotic action *in vivo* on haemocytes of *Tenebrio molitor* and in the cardiotropic test *in vitro* on the heart of *T. molitor* and *Zophobas atratus.* In the *in vivo* bioassays, new biological activities of alloferon and its analogues were discovered. In haemocytotoxic bioassay, alloferon strongly induces *T. molitor* haemocytes to undergo apoptosis at a dose of 10 nM. Moreover, [Phe(p-NH_2)^1]-, [Tyr^6]- and [1-10]-alloferon exhibit a two-fold increase of caspases activation in comparison with the alloferon. However, alloferon and its analogues show a weak cardiostimulatory activity in *Z. atratus* but the heart of *T. molitor* is not sensitive to these peptides. The results obtained here suggest that alloferon plays pleiotropic functions in insects.

Słowa kluczowe

Alloferon, Apoptosis, Haemocyte, insect peptide, Haemocytotropic activity, Cardiotropic activity

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