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Short neuropeptide F in integrated insect physiology

Key words: Insect neuropeptides, Invertebrate neurobiology, Short neuropeptide F, sNPF, Feeding, Neurohormones

Research Summary

This review mainly focused on the current knowledge on the role of short neuropeptide F (sNPF) in regulation of insect physiology with emphasis on:

- Feeding
- Reproduction
- Development
- Locomotor activity
- Cicardian clock



Innovation points

• Introduction of the short neuropeptide F precursor structure, receptor structure and cell dowstream signaling

• Summary of the most updated information on involvement of sNPF in regulation of insect physiology

• Emphasis of the physiological processes directly and indirectly regulated by sNPF

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Acypi_sNPF1					-	N	Q R	s	Р	SĹ	RL	R	G
Aedae_HP1			-		s	А	Q R	Р	Р	s L	кT	R	G
Aedae_sNPF1			-		-	A	VR	s	Р	SL	RL	R	G
Aedae_sNPF2			-		-	s	I R	А	Р	QL	RL	R	G
Aedae_sNPF3			-		-	-		А	Р	sQ	RL	RV	VG
Aedae_sNPF4			-		-	A	I R	А	Р	QL	RL	R	G
Aedal_sNPF1			-		-	A	VR	s	Р	SL	RL	R	G
Aedal_sNPF2			-		-	s	I R	А	Р	QL	RL	R	G
Aedal_sNPF3			-		-	-		А	Р	sQ	RL	RV	VG
Aedal_sNPF4			-		-	A	I R	А	Р	QL	RL	R	G
Anoni_sNPF1			-		-	A	VR	s	Р	SL	RL	R	G
Anoni_sNPF2			-		-	Т	I R	А	Р	QL	RL	R	G
Anoni_sNPF3			-	• •	-	-		А	Р	sQ	RL	RV	VG
Anoni_sNPF4			-		-	A	I R	А	Р	QL	RL	R	G
Anoni_sNPF5			-		-	-		A	Р	ΤQ	RL	RV	VG
Bacdo_sNPF1			-		-	A	Q R	s	Р	SL	RL	R	G
Bacdo_sNPF2	WF	G	V	NC	<mark>a</mark> K	Р	I R	s	Р	SL	RL	R	G
Bacdo_sNPF3			-		-	-		•	-	P Q	RL	R	G
Bacdo_sNPF4			-		-	-		Р	s	P L	RL	R	G
Bemta_sNPF1	· .		-		-	s.	A R	т	Р	SL	RL	R	G
Bemta_sNPF2	- <mark>S</mark>	D	N	MS	ŝS	F	QQ	s	P	тL	RL	R	G
Carmo_sNPF			-		-	s	NR	s	Р	SL	RL	R	G
Drome_sNPF1			-		-	A	Q R	s	Р	SL	RL	R	G
Drome_sNPF2	WF	G	V	NC	ξ.Κ	Ρ	I R	S	Р	SL	RL	R	G
Drome_sNPF3			-		-	-		-	-	P Q	RL	RV	VG
Drome_sNPF4			-		-	-			-	P M	RL	RV	VG
Musdo_sNPF1			-		-	A	Q R	s	Р	SL	RL	R	G
Musdo_sNPF2	WF	G	V	NC	ξ.Κ	Ρ	I R	S	Р	SL	RL	R	G
Musdo_sNPF3			-		-	-		-	-	P Q	RL	R	G
Musdo_sNPF4			-		-	-		Ρ.	A	P L	RL	RV	VG
Schgr_sNPF1			-		-	S	N R	s	Р	SL	RL	R	G
Schgr_sNPF2			-		-	-		s	Р	SL	RL	R	G
Tenmo_sNPF			-		-	s	S R	s	Р	SL	RL	R	G
Timmo_sNPF			-		-	s	N R	s	Р	SL	RL	R	G
Trica_sNPF			-		-	S	G R	S	Ρ	SL	RL	R	G
Zopat_sNPF			-		-	S	SR	S	Р	SL	RL	R	G
Consensus	nsen: WF	sus G I		NG) K	A	R	S S	P	S So	RI	R	G

Innovation points

A series of comprehensive figures and tables were generated to summarize the latest knowledge about sNPF neuropeptides.

Table 1 Summary of the physiological functions of sNPF in various insect species.

Figure 1 Alignment of sNPF precursor sequences from different insect species.

Figure 2 Alignment of mature sNPF peptides from different insect species.

Figure 3 Phylogenetic tree of sNPF receptors of selected insect species.

Figure 4 Possible involvement of sNPF in the regulation of various physiological processes in insects.