Corticotropin Releasing Factor (CRF)

Introduction

Corticotrophin-releasing factor (CRF), a 41 amino acid peptide, plays a significant role in coordinating the overall response to stress through actions both in the brain and the periphery. In addition of CRF, neuropeptide urotensin I, urocortin and sauvagine also belong to CRF family, which share great homology sequence with CRF.

Structure of CRF family

CRF, human	S E E	P	P I	S	L	D	LTFH	LLR	EVL	E	MARAEQLAQQ	A	HS	NR	KLMEII-	NH2
Urocortin, human	D N	P	S L	S	I	D	LTFH	LLR	TLL	E	LARTQSQRER	A	EQ	NR	IIFDSV-	NH2
Urotensin I	N D D	P	P I	S	I	D	LTFH	LLR	NMI	E	MARIENEREQ	A	GL	NR	KYLDEV-	NH2
Sauvagine	E G	P	P I	S	I	D	LSLE	LLR	KMI	E	IEKQEKEKQQ	A	AN	NR	LLLDTI-	NH2

In the brain, CRF is produced and secreted primarily from parvocellular neurons of the paraventricular hypothalamic nucleus. From there, the CRF-containing neurons project to the portal capillary zone of the median eminence and act to stimulate the secretion of adrenocorticotrophic hormone (ACTH), beta-endorphin, and other proopiomelanocortin (POMC)-derived peptides from the pituitary gland. The subsequent ACTH-induced release of adrenal glucocorticoids represents the final stage in the hypothalamic-pituitary-adrenal axis (HPA), which mediates the endocrine response to stress. Besides its neuroendocrine role, CRF also functions as a neurotransmitter and neuromodulator to elicit a wide spectrum of autonomic, behavioral and immune effects to physiological, pharmacological, and pathological stimuli.

Recent molecular cloning studies indicate that the actions of CRF are mediated by distinct receptors that exhibit specific pharmacological and anatomical characteristics. So far, three subtypes of mammalian CRF receptors, CRF1, CRF2a, CRF2b, have been classified, all of them belong to the superfamily of "brain-gut" neuropeptide receptors which possess seven putative transmembrane domains. In addition, the existence of CRF-BP (binding protein) that binds and inactivates CRF provides an additional means by which CRF effects may be modulated.

Clinical studies indicated that CRF hypersecretion is associated with various diseases, such as major depression, anxiety-related illness, eating disorder, as well as inflammatory disorder. Low levels of CRF were found in Alzheimer's disease, dementias, obesity, and many endocrine diseases. Therefore, strategies to counter the effects associated with high levels or low levels of CRF will provide a basis of drug design for the treatment of disease states that are associated with abnormal CRF levels. Several peptide antagonists and nonpeptide antagonists have been discovered and widely studied, including a-helical CRF (9-41), Astressin, D-PheCRF (12-41) (peptide antagonist) and CP-154526 (nonpeptide antagonist). These CRF antagonists may provide a novel agent for treatment of depression, anxiety and other CRF related illnesses.

American Peptide Company, Inc.

Headquarters
777 East Evelyn Ave.
Sunnyvale, CA 94086
USA

Phone: (408)733-7604
Fax: (408)733-7603

cGMP Manufacturing
1271 Avenida Chelsea
Vista, CA 92081
USA

Phone: (760) 597-8820
Fax: (760) 597-8816

Toll free: phone/ (800) 926-8272 fax/ (888) 670-0070
Email: sales@americanpeptide.com,
URL: **www.americanpeptide.com**