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Title (English)

Insulin-like growth factor II and its mimetic peptides

Title (Swedish)

Abstract

The insulin-like growth factor I and II (IGF-I and -II) are structurally similar polypeptides with neurotrophic effects, particularly important in the development of the nervous system. The actions of both factors are mainly mediated through the IGF-I receptor (IGF-IR). However, the knowledge of the IGF-II IGF-IR interaction is very limited. In this master's thesis IGF-II was characterized by studying the ability of IGF-II derived peptides to bind to IGF-IR and differentiate neurons. Four peptides were found to exhibit neuritogenic effect and two of those shown to bind to the IGF-IR, but also to the IGF-II receptor (IGF-IIR) and the insulin receptor (IR). Thus, the peptides contain IGF-II sites responsible for binding to and activation of IGF-IR, as well as binding to IGF-IIR and IR. Impairment in IGF-I and IGF-II signaling has previously been observed in several neurodegenerative disorders and in relation to this, the IGF-II mimetic peptides may serve as a therapeutic rescue.

Keywords

IGF-II derived peptides, neuritogenesis, binding sites, IGF-I receptor activation, neurodegenerative disorders

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