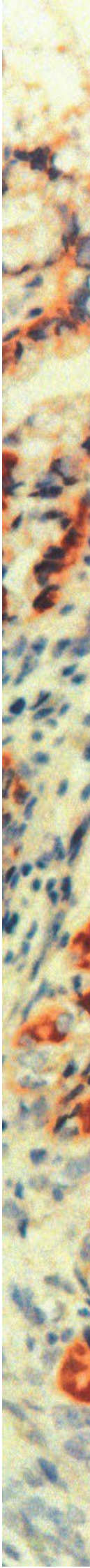




TECHNICAL BULLETIN #2

Human IGF-I and IGF-II Analogues



GroPep Bioreagents produces IGF-I and IGF-II in both a high-purity Receptor Grade (RG) and a cost-effective Media Grade (MG).

GroPep scientists have engineered a number of IGF-I and IGF-II analogues with altered affinity for the Type 1 IGF receptor or the IGF Binding Proteins (IGFBPs).

[Arg³]IGF-I, Des(1-3)IGF-I and LR³IGF-I

- More potent anabolic factors than IGF-I in vivo and in vitro.
- Enhanced potency is due to reduced binding to IGFBPs, which modulate the biological actions of IGFs.

Des(1-6)IGF-II

- Similar anabolic potency to IGF-II in vitro.
- Similar affinity for the Type 2 IGF receptor relative to IGF-II.
- Reduced binding to human IGFBP-3 relative to IGF-II.

[Leu²⁷]IGF-II

- Lower affinity for the Type 1 IGF receptor relative to IGF-II.
- Similar affinity for the Type 2 receptor relative to IGF-II.
- Reduced binding to human IGFBP-3 relative to IGF-II.

IGF-I properties at a glance:

IGF-I Analog (Receptor Grade)	Type 1 IGF Receptor Binding Assay* ED ₅₀ (ng/ml)		Binding to IGFBPs* ED ₅₀ (ng/ml)		Stimulation of Protein Synthesis ED ₅₀ (ng/ml)	Molecular Weight (Da)
	A	B	C	D	A	
IGF-I	5	2	4	2	11	7649
Des(1-3)IGF-I	4	ND	160	5	2	7365
[Arg ³] IGF-I	7	ND	70	ND	2	7676
LR ³ IGF-I	18	ND	>1000	>200	2	9111
[Ala ³¹] IGF-I	ND	19	ND	1	38	7557
Des(2,3)[Ala ³¹] IGF-I	ND	46	ND	2	ND	7330
[Leu ²⁴] IGF-I	ND	150	ND	2	76	7599
Des (2,3)[Leu ²⁴] IGF-I	ND	117	ND	5	ND	7373
[Leu ⁶⁰] IGF-I	ND	190	ND	2	>2000	7599
[Ala ³¹][Leu ⁶⁰] IGF-I	ND	>750	ND	2	>2000	7507
[Leu ²⁴][Ala ³¹] IGF-I	ND	>750	ND	3	>2000	7507

Assay conditions/system: A Rat L6 myoblast monolayers. B Human placental membranes. C Conditioned medium from rat L6 myoblasts (predominantly IGFBP-4 & -5). D Human acid-stripped serum (predominantly IGFBP-3). ND: Not determined

* All competition binding assays performed using IGF-I as tracer.
Data compiled for comparative purposes from GroPep experimental data and literature.

IGF-II properties at a glance:

IGF-II Analog (Receptor Grade)	IGF Receptor Binding Assay* ED ₅₀ (ng/ml)		Binding to IGFBPs* ED ₅₀ (ng/ml)		Stimulation of Protein Synthesis ED ₅₀ (ng/ml)	Molecular Weight (Da)	
	Type 1*		Type 2**		A		
	A	B	A	C			D
IGF-II	16	4.5	55	5	0.45	54	7469
Des(1-6)IGF-II	28	ND	115*	>1000	ND	45	6765
[Leu ²⁷]IGF0II	60	185	120	ND	1.5	ND	7420

Assay conditions/system: A Rat L6 myoblast monolayers. B Human placental membranes. C Conditioned medium from rat L6 myoblasts (predominantly IGFBP-4 & -5). D Human acid-stripped serum (predominantly IGFBP-3). ND: Not determined

a In cell suspensions, the affinity of Des(1-6)IGF-II is slightly greater than IGF-II.
Data compiled for comparative purposes from GroPep experimental data and literature.

* Performed using IGF-I as tracer.
** Performed using IGF-II as tracer.

TECHNICAL BULLETIN #2

Human IGF-I and IGF-II Analogues

Human IGF-I

Bovine, canine, equine, guinea pig and porcine IGF-I have the same sequence as human IGF-I

Receptor Grade

Code: CU020 20µg Code: CM001 1mg
Code: CU100 100µg Code: CM005 5mg

Media Grade

Code: IU100 100µg Code: IM005 5mg
Code: IM001 1mg

[Arg³] IGF-I

Receptor Grade

Code: EU100 100µg
Code: EM001 1mg

Media Grade

Code: LU100 100µg Code: LM005 5mg
Code: LM001 1mg

Des(1-3)IGF-I

Receptor Grade

Code: DU100 100µg
Code: DM001 1mg

LR³IGF-I

Receptor Grade

Code: BU020 20µg Code: BM005 5mg
Code: BU100 100µg

Media Grade

Code: AM001 1mg
Code: AM010 10mg

Biotinyl IGF-I

Code: AQU050 50µg Code: AQU500 500µg
Code: AQU100 100µg

Human IGF-II

Receptor Grade

Code: FU020 20µg Code: FM001 1mg
Code: FU100 100µg

Media Grade

Code: OU100 100µg
Code: OM001 1mg

Mono-biotinyl Human IGF-II

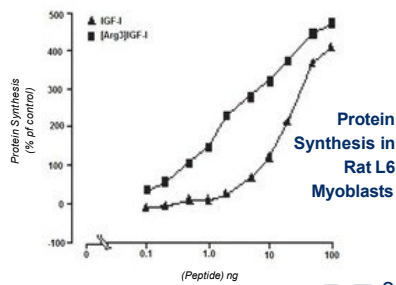
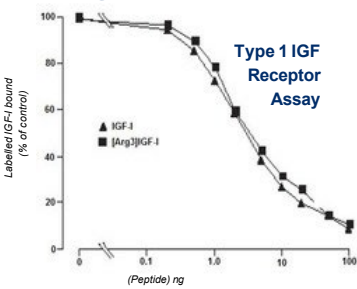
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Code: AMU050 50µg

Di-biotinyl Human IGF-II

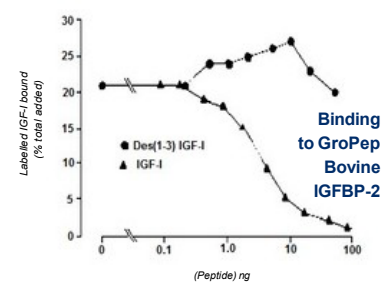
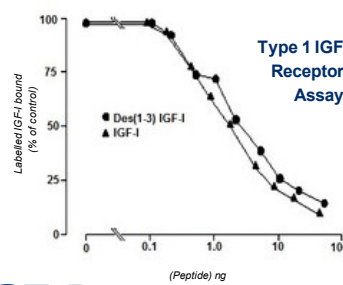
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Graphs of Biological Activity:

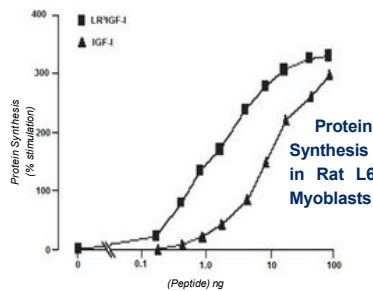
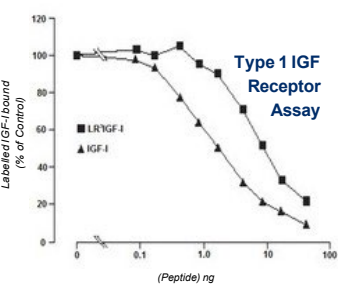
[Arg³]IGF-I



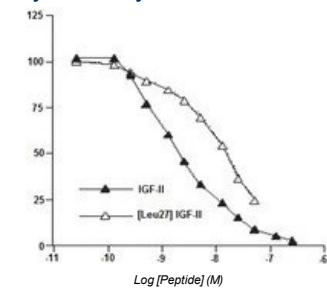
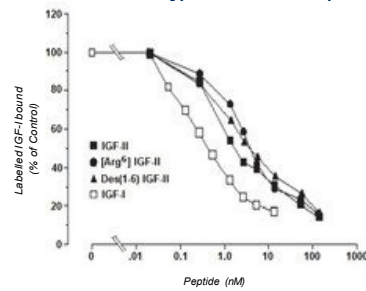
Des(1-3) IGF-I



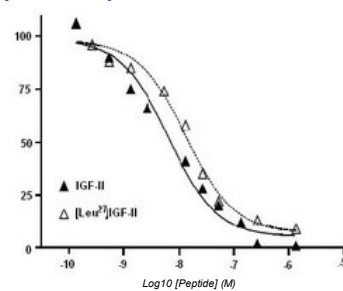
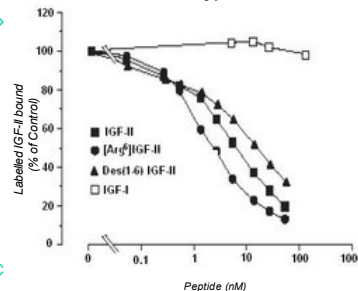
LR³ IGF-I



Type 1 IGF Radioreceptor assay in rat L6 myoblasts



Type 2 IGF Radioreceptor assay in rat L6 myoblasts



Des(1-6)IGF-II and [Leu27]IGF-II have reduced affinity for the Type 1 IGF Receptor compared with IGF-I and IGF-II in an IGF radioreceptor assay.

GroPep human IGF-I exhibit greater affinity for the Type 1 IGF Receptor than IGF-II.

Human IGF-I does not bind significantly to the Type 2 Receptor.

Des(1-6)IGF-II has reduced affinity for the Type 2 IGF Receptor compared with IGF-II.

[Leu27]IGF-II has similar affinity for the Type 2 IGF Receptor as does IGF-II.

Assay method from Ballard FJ et al. (1986) Biochem. J. 233, 223

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