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**Human Des(1-3) IGF-1,
Biotinylated (Biotin-Des(1-3) IGF-1)**

Catalog Number: D1330-G10 / D1330-G20

Size: 10 µg / 20 µg

Storage: 4°C for up to 1 year

PRODUCT SPECIFICATION SHEET

Product Specifications Biotinylated Human Des(1-3) Insulin-like Growth Factor-1

- **Quantity:** 10 µg / 20 µg
- **Description:** Biotin- Des(1-3) IGF-1 is prepared by a selective biotinylation procedure. As in the non-biotinylated analog, binding to IGF-binding proteins 1 to 5 is reduced. No binding to IGFBP-6 was detected.

Due to its reduced binding affinity to the IGFBP's, Biotin - Des (1-3) IGF-I may be used for selective detection of IGF-I receptors on western blots, for binding studies or in immunohistochemistry. The use of biotinylated Des (1-3) IGF-I in flow cytometry has been reported by Xu et al. (1995), Immunology 85, 394-399. The affinity to IGFBP's is reduced compared to IGF-I.

Examples of applications of biotinylated IGF's can be seen in application note.

- **Formulation:** Lyophilized from a solution of 0.5 ml TBS, pH 7.4, containing 10µg of the biotinylated product. A preservative and a stabilizing protein of non-mammalian origin are added to ensure stability.

Recommended dilution: 1: 100 for western ligand blotting. Tested with our western ligand blotting kit reagents.

- **Storage:** Store refrigerated upon arrival. The product is stable at 4 °C for at least one year. Reconstitute with 0.5 ml water and store aliquots frozen at 20 °C. Avoid repeated freeze-thawing cycles.

FOR RESEARCH USE ONLY



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Application Notes:

Biotinylated IGF's and analogs from IBT GmbH (formerly A. F. Schuetzdeller Biochemicals, AFSBIO) have been the first that have been commercially available. Our non-radioactive western-ligand blotting kits have been on the market more than one year before the first scientific paper on this alternative, non-radioactive method has been published.

Biotinylation Technology:

We have developed our own biotinylation technology for IGF's that is different from the published methods. Our technology permits biotinylation without loss of binding capacity to IGFBP's or IGF antibodies.

Stability:

Though our biotinylated IGF's are very stable in solution, we have shipped them in the past on dry ice to ensure maximum activity for our customers. This has increased shipping cost so we have decided to lyophilize our IGF's. In this form we have kept them for three months at temperatures up to 35 °C without loss of activity. So they can be shipped now without dry ice at reduced freight cost.

For long term storage, we recommend to store the IGF's refrigerated after arrival. The reconstituted biotinylated IGF's are stable for at least one year at a concentration of 20 µg/ml, if kept frozen at -20 °C, and at least for one month at 4 °C. We recommend to aliquot the reconstituted biotinylated IGF's and to store them at a temperature of - 20 °C.

Potential uses for biotinylated IGF's:

- *Western-ligand blotting:*
We have tested our biotinylated IGF's and analogs in western-ligand blotting. Chemiluminescent substrates as well as colorimetric ones have successfully been used. We also have developed our own buffer system, with buffers, that are stable for at least six months and give an excellent signal-to background ratio. Kits are available for human (bovine, sheep, donkey, pig, guinea pig, goat) IGFBP's and mouse/rat IGFBP's (see western-ligand blotting kit section in our price list). Analogs with reduced affinity to IGFBP's have also reduced affinities in our western-ligand blot system.
- *Western-ligand blots with biotinylated IGF-I and analogs.*
Biotinylated IGF-I binds to all six IGFBP's, but binds to IGFBP-6 very weakly. For all IGF-I analogs at least weak signals have been obtained with IGFBP-1 to -5, but no signals were observed with IGFBP-6.
- *ELISA:*
We have tested our biotinylated human IGF-I and IGF-II in a competitive ELISA format using our polyclonal antisera PAA1 and PAC1. Binding to the antibodies was not affected by biotinylation.



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- *Immunoprecipitation/chromatography of IGFBP's:*
We have used our biotinylated human IGF-I and IGF-II in immunoprecipitation experiments. Binding of biotinylated IGF's to Streptavidin may also be used to prepare media for affinity chromatography in a column format.
- *Cross-linking experiments:*
We have started to develop methods using our biotinylated IGF's for cross-linking experiments. The method is not fully developed, e.g. the washing procedure needs to be improved and the extraction procedure for proteins needs improvement, too. Preliminary results are available.
- *Immunohistochemistry:*
We have started experiments with our biotinylated IGF's for IHC with human cells fixed on slides. The results of histochemistry have not been examined systematically, but staining has been observed on the surface of the cells.
- *Flow cytometry:*
The use of Biotin-Des (1-3) IGF-I in flow cytometry has been reported by Xu et al. (1995), Immunology 85, 394-399.

References

- 1.) Michael E. Davis*, Patrick C. H. Hsieh*, Tomosaburo Takahashi*, Qing Song, Shuguang Zhang, Roger D. Kamm, Alan J. Grodzinsky, Piero Anversa, and Richard T. Lee*: Local myocardial insulin-like growth factor 1 (IGF-1) delivery with biotinylated peptide nanofibers improves cell therapy for myocardial infarction. PNAS | May 23, 2006 | vol. 103 | no. 21 | 8155-8160
- 2.) Altmann et. al.: The relationships between leptin concentrations and body fat reserves in lambs are reduced by short-term fasting. Journal of Animal Physiology and Animal Nutrition 2006, Vol. 90, issue 9-10, p407 - 413.
- 3.) Bolos et al.: ORAL ADMINISTRATION OF A GSK3 INHIBITOR INCREASES BRAIN INSULIN-LIKE GROWTH FACTOR-I LEVELS. JBC Papers in Press. Published on March 29, 2010.
- 4.) Nishijima et al.: Neuronal Activity Drives Localized Blood-Brain-Barrier Transport of Serum Insulin-like Growth Factor-I into the CNS. Neuron 67, 834-846, September 9, 2010.



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