

## Product Information

### INHIBIN A Human, Recombinant Expressed in CHO cells

Product Number I 2902

#### Product Description

Recombinant human Inhibin A is a disulfide-linked heterodimeric protein expressed in Chinese hamster ovary (CHO) cells. This product is produced from DNA sequences encoding the human inhibin/activin  $\alpha$  subunit and the  $\beta_A$  subunit.<sup>1</sup> The mature  $\alpha$  subunit, 134 amino acid residues, contains two N-linked glycosylation sites and has a calculated molecular mass of 14.7 kDa. The mature  $\beta_A$  subunit, 116 amino acid residues, lacks a potential N-linked glycosylation site and has a calculated molecular mass of 13 kDa. Due to heterogenous glycosylation, the  $\alpha$  chain migrates as two wide bands of approximately 20 kDa and 24 kDa in SDS-PAGE under reducing conditions.

Inhibin-A ( $\alpha$ - $\beta_A$ ) was originally purified from gonadal fluids as proteins that inhibited pituitary follicle stimulating hormone (FSH) release.<sup>2</sup> Inhibins and activins are members of the TGF- $\beta$  superfamily due to their amino acid homology with respect to the conservation of 7 of the 9 cysteine residues common to all TGF- $\beta$  forms.<sup>3</sup> Activins/inhibins are produced as precursor proteins with an amino-terminal propeptide that is cleaved to release carboxy-terminal bioactive ligands. Inhibins are heterodimers of a unique  $\alpha$  subunit and one of the various  $\beta$  subunits.<sup>4</sup> Five  $\beta$  subunits have been cloned (mammalian  $\beta_A$ ,  $\beta_B$ ,  $\beta_C$ ,  $\beta_E$ , and *Xenopus*  $\beta_D$ ).<sup>3</sup> The inhibin nomenclature reflects the subunit composition of the proteins: inhibin A ( $\alpha$ - $\beta_A$ ), and inhibin B ( $\alpha$ - $\beta_B$ ). The mature human  $\beta_A$  subunit shares 100 % sequence identity to mouse  $\beta_A$ , while the human and mouse  $\alpha$  subunits exhibit approximately 95 % identity. Cells known to express the  $\beta_A$  chain include fibroblasts, endothelial cells, hepatocytes, vascular smooth muscle cells, macrophages, keratinocytes, osteoclasts, bone marrow monocytes, prostatic epithelium, neurons, chondrocytes, osteoblasts, Leydig cells, Sertoli cells, and ovarian granulosa cells. Inhibins, activins, and follistatin are expressed in numerous tissues, including brain, adrenal, bone marrow, placenta, reproductive tissues, and most notably the anterior pituitary.<sup>5</sup>

Activins and inhibins have a wide range of biological activities including mesoderm induction<sup>6,7</sup>, neural cell differentiation, bone remodeling, hematopoiesis, and

reproductive physiology. They are involved in growth and differentiation of several tissues from different species.<sup>2,7,8,9</sup> Inhibin A and inhibin B are capable of suppressing follicle-stimulating hormone (FSH) both *in vitro* and *in vivo*.<sup>10</sup> Inhibins influence paracrine and autocrine regulation in follicle cell differentiation and steroidogenesis.<sup>5,9</sup> The biological activity of inhibin resembles that of an activin antagonist acting as a gating molecule for activin signaling.<sup>8</sup> Inhibins compete for the activin receptor and interact with high affinity and specificity with membrane-binding proteins.<sup>11</sup>

#### Reagent

Inhibin A is supplied as approximately 25  $\mu$ g of protein lyophilized from a 0.2  $\mu$ m filtered solution in 35 % acetonitrile, 0.1 % trifluoroacetic acid (TFA) containing 1.25 mg bovine serum albumin.

#### Preparation Instructions

Reconstitute the contents of the vial using sterile phosphate-buffered saline (PBS) containing 0.1 % human serum albumin or bovine serum albumin. Prepare a stock solution of no less than 25  $\mu$ g/ml.

#### Storage/Stability

Prior to reconstitution, store at  $-20$  °C. Reconstituted product may be stored at 2 °C to 8 °C for at least one month. For prolonged storage, freeze in working aliquots at  $-20$  °C. Avoid repeated freezing and thawing.

#### Product Profile

Inhibin A is measured by its ability to inhibit activin A induced hemoglobin expression in K562 leukemic cells.<sup>12</sup>

1  $\mu$ g/ml of recombinant human inhibin A will suppress recombinant human activin A (3 ng/ml) induced hemoglobin expression in K562 cells by 70 to 90 %.

Purity: >97 % as determined by SDS-PAGE, visualized by silver stain.

Endotoxin: <0.1 ng/ $\mu$ g determined by the LAL method.

#### References

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KAA 01/01

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