

## Product Information

### HumanKine™ Activin A, human recombinant, expressed in HEK 293 cells

Catalog Number **H4666**  
Storage Temperature  $-20\text{ }^{\circ}\text{C}$

#### Product Description

HumanKine™ Activin A is expressed as a glycosylated disulfide linked 25 kDa homodimer in HEK 293 cells.<sup>1</sup> Glycosylation contributes to stability in cell growth media and other applications. Production in human 293 cells offers authentic glycosylation. Glycosylation contributes to stability in cell growth media and other applications.

Activin A ( $\beta_A$ - $\beta_A$ ) is secreted by Sertoli cells in the testis<sup>2</sup> and granulosa cells in the ovary. In early studies, this peptide was thought to be an inhibin and not recognized as a unique compound.<sup>3,4</sup> Activins and inhibins are members of the TGF- $\beta$  superfamily due to amino acid homology with respect to the conservation of 7 of the 9 cysteine residues common to all TGF- $\beta$  forms.<sup>4</sup> Activins are homodimers or heterodimers of the various  $\beta$  subunit isoforms, while inhibins are heterodimers of a unique  $\alpha$  subunit and one of the various  $\beta$  subunits.<sup>5</sup> Five  $\beta$  subunits have been cloned (mammalian  $\beta_A$ ,  $\beta_B$ ,  $\beta_C$ ,  $\beta_E$ , and *Xenopus*  $\beta_D$ ). The activin/inhibin nomenclature reflects the subunit composition of the proteins: activin A ( $\beta_A$ - $\beta_A$ ), activin B ( $\beta_B$ - $\beta_B$ ), activin AB ( $\beta_B$ - $\beta_A$ ), inhibin A ( $\alpha$ - $\beta_A$ ), and inhibin B ( $\alpha$ - $\beta_B$ ). The mature human  $\beta_A$  subunit is 100% identical to mouse  $\beta_A$ . Cells known to express the  $\beta_A$  chain include fibroblasts, endothelial cells, vascular smooth muscle cells, hepatocytes, macrophages, keratinocytes, osteoclasts, prostatic epithelium, neurons, chondrocytes, osteoblasts, Leydig cells, bone marrow monocytes, Sertoli cells, and ovarian granulosa cells.

Activins have a wide range of biological activities including mesoderm induction,<sup>6,7</sup> bone remodeling, neural cell differentiation, hematopoiesis, and reproductive physiology. Activin A is involved in growth and differentiation of several tissues from different species.<sup>2-3,7-8</sup> This protein also plays a key role in the production and regulation of hormones such as FSH, LH, GnRH, and ACTH. Activin influences erythropoiesis and the potentiation of erythroid colony formation, oxytocin secretion, paracrine, and autocrine regulation.<sup>3</sup>

Similar to other TGF- $\beta$  family members, activins exert their biological activities through the effects of the heterodimeric complex composed of two membrane spanning serine-threonine kinases designated type I and type II receptors.<sup>9</sup> Activin type I and type II receptors are distinguished by the level of sequence homology of their kinase domains, and other structural and functional features. To date, seven type I and five type II activin receptors have been cloned from mammals, including activin receptor IA, activin receptor IIA, activin receptor IB, and activin receptor IIB. In addition, two splice variants of activin receptor IIA and five splice variants of activin receptor IIB have been reported.<sup>10</sup> Activin binds directly to activin receptor type II, this complex then associates with activin receptor type I and initiates signal transduction.<sup>11</sup>

This product is lyophilized from a PBS solution.

ED<sub>50</sub>:  $\leq 5.0\text{ ng/mL}$

The specific activity is determined by the dose-dependent inhibition of proliferation of the MPC-11 cell line (mouse plasmocytoma cell line).

Purity:  $\geq 95\%$  (SDS-PAGE)

Endotoxin level:  $\leq 1\text{ EU}/\mu\text{g}$

#### Preparation Instructions

Briefly centrifuge the vial before opening. It is recommended to reconstitute the protein in sterile PBS containing 0.1% endotoxin-free, recombinant human serum albumin

#### Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

### Storage/Stability

Store the product at  $-20^{\circ}\text{C}$ . The lyophilized product remains active for one year at  $-20^{\circ}\text{C}$ .

Upon reconstitution, the cytokine can be stored at  $2-8^{\circ}\text{C}$  for short term only, or at  $-20^{\circ}\text{C}$  to  $-80^{\circ}\text{C}$  in aliquots for long term. Avoid repeated freeze-thaw cycles.

### References

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