

Product Information

Anti-Activin Receptor IIB

produced in goat, affinity isolated antibody

Catalog Number **A0457**

Product Description

Anti-Activin Receptor IIB is produced in goat using a purified recombinant human activin receptor IIB extracellular domain, expressed in mouse NSO myeloma cells, as immunogen. Affinity isolated antibody is obtained from goat anti-activin receptor IIB antiserum by immuno-specific purification which removes essentially all goat serum proteins, including immunoglobulins, which do not specifically bind to the peptide.

Anti-Activin Receptor IIB recognizes recombinant human activin receptor IIB by various techniques including immunoblotting, immunohistochemistry and flow cytometry. Based on immunoblotting, this antibody shows no cross-reactivity with recombinant human activin receptor IA, recombinant human activin receptor IIA, and recombinant human activin receptor IB. This antibody has been selected for its ability to block receptor-ligand interaction.

Activin, a disulfide-linked homodimeric protein, is secreted by Sertoli¹ cells in the testis and granulosa cells in the ovary. In early studies, this peptide was thought to be an inhibin and not recognized as a unique compound.^{2,3} Activins and inhibins are members of the TGF- β superfamily due to amino acid homology with respect to the conservation of 7 of the 9 cysteine residues common to all TGF- β forms.³ Activins are homodimers or heterodimers of the various β subunit isoforms, while inhibins are heterodimers of a unique α subunit and one of the various β subunits.⁴ Five β subunits have been cloned (mammalian β_A , β_B , β_C , β_E , and *Xenopus* β_D).³ The activin/inhibin nomenclature reflects the subunit composition of the proteins: activin A (β_A - β_A), activin B (β_B - β_B), activin AB (β_B - β_A), inhibin A (α - β_A), and inhibin B (α - β_B).

Activins have a wide range of biological activities including mesoderm induction^{5,6}, neural cell differentiation, bone remodeling, hematopoiesis, and reproductive physiology. Activins are also involved in growth and differentiation of several tissues from different species.^{1,2,6,7} 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.²

Similar to other TGF- β 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.⁸ 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.⁹

Type I activin receptors do not bind directly to activin but will associate with the type II receptor-activin complex and initiate signal transduction.¹⁰ Recombinant soluble activin type II receptors bind activin with high affinity and are potent activin antagonists. Activin type II receptors are highly conserved and will also bind inhibin, BMP-2, and BMP-7 with lower affinities. Human, mouse, and rat type II activin receptors share 98% homology.

Reagent

Supplied lyophilized from a 0.2 μ m filtered solution in phosphate buffered saline containing 5% trehalose.

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.

Preparation Instructions

To one vial of lyophilized powder, add 1 ml of phosphate buffered saline (PBS) to produce 0.1 mg/ml stock solution of antibody.

Storage/Stability

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

Product Profile

Anti-Activin Receptor IIB has the ability to block receptor-ligand interaction. In this assay, the antibody ($1-3\ \mu\text{g}/\text{mL}$) will block 50% of the binding of $30\ \text{ng}/\text{mL}$ recombinant human activin A to immobilized recombinant human activin receptor IIB/Fc chimera ($100\ \mu\text{L}$ of a $0.5\ \mu\text{g}/\text{mL}$ solution coating each well) in an ELISA assay.

Immunoblotting: a working concentration of $0.1-0.2\ \mu\text{g}/\text{mL}$ detects human activin receptor IIB at $\sim 1\ \text{ng}/\text{lane}$ under reducing and non-reducing conditions.

Immunohistochemistry: a working concentration of $5\ \mu\text{g}/\text{mL}$ detects activin receptor IIB in paraffin-embedded tissue sections.

Flow Cytometry: add $10\ \mu\text{L}$ of a $25\ \mu\text{g}/\text{mL}$ working concentration to $1-2.5 \times 10^5$ cells. Do not exceed a total reaction volume of $200\ \mu\text{L}$.

Endotoxin: $<0.1\ \text{EU}/\mu\text{g}$ antibody determined by the LAL method.

References

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