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Product Information

Apolipoprotein E4
human, recombinant
expressed in baculovirus infected *Sf* cells

Catalog Number **A2456**
Storage Temperature –70 °C

Synonym: Human rApo E4

Product Description

Apolipoprotein E (Apo E) has long been known to be a ligand for the low density lipoprotein (LDL) receptor and has recently been implicated as an important factor in nerve degeneration and regeneration. Ongoing research points to new roles for Apo E in neuron function and suggests potential ways in which the protein may be involved in the development of new therapeutics for crippling diseases in the neurological sciences.

The discovery that apolipoprotein E isoforms are associated with the progression of Alzheimer's disease in late-onset families renewed the interest in the function of this important member of the apolipoprotein family.[1] Researchers have shown there is a prevalence of Alzheimer's disease in individuals with the Apo E4 isoform. The role of Apo E isoforms in Alzheimer's disease is unclear. In one hypothesis, Apo E4 is less potent than Apo E3 in inhibiting nucleation of amyloid formation.[2] Another theory focused on the ability of Apo E3 and E2 to stabilize the neuronal microtubule protein Tau, preventing nerve cell death.

Molecular mass of rApoE: ~34 kDa (SDS-PAGE)

pI (2-D gel electrophoresis):
~6.25 (rApo E2)
~6.35 (Apo E3)
6.55–6.7 (Apo E4)
Minor acidic isoforms are also present and appear to be due to glycosylation and deamination differences.

The pI values of Apo E2, E3, and E4 differ due to unique amino acid substitutions within the amino acid sequence.

	Residue	
	112	158
E2	Cys	Cys
E3	Cys	Arg
E4	Arg	Arg

Post-translational Modifications: 2-D gel electrophoresis reveals a complicated isoform pattern for hrApo E, reminiscent of the human serum Apo E pattern.[3] Along with the primary hrApo E band, 3–4 additional bands occur at more acidic isoelectric points (pI), apparently representing sialylated and deaminated forms of hrApoE. The relative abundance of each recombinant isoform is in the range seen with human serum Apo E.

This human, recombinant product is expressed in baculovirus infected *Spodoptera frugiperda* cells and is supplied in a 0.7 M ammonium bicarbonate solution.[4] It competes with iodinated human low density lipoprotein for binding to the human Apo B/E (LDL) receptor and binds to amyloid-β peptide in soluble binding assays.[5] The recombinant human Apo E2, E3, and E4 isoforms retain full biological activity, enabling researchers to study interactions of ApoE isoforms with amyloid-β and Tau proteins as well as the LDL receptor.

Protein is determined by Bradford method with BSA as standard. Because ammonium bicarbonate interferes with the assay, this buffer should be included in all standards and blanks. Do not use other common protein assays such as the Lowry and BCA assays.

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

Human rApoE is soluble in aqueous solutions. At concentrations >1.0 mg/ml, there may be no free monomer due to self-association common to the amphipathic apoproteins.[6]

Storage/Stability

Store the product at –70 °C. ApoE may aggregate with repeated freeze-thaws. Freezing Apo E in ammonium bicarbonate solutions is the preferred method of storage. Avoid storage at 2–8 °C.[7] In order to remove the ammonium bicarbonate, the solution should be dialyzed gently into the desired buffer. Lyophilization of Apo E is not recommended because some biological activities may be affected. If Apo E samples are lyophilized, in order to minimize self-association and aggregation of lyophilized samples, dissolve lyophilized powders in 0.7 M ammonium bicarbonate. Aggregates and multimers may still exist.

References

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