3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

Erythropoietin (EPO) human
recombinant, expressed in HEK 293 cells
cell culture tested

Product Number **E5546**
Storage Temperature –20 °C

Synonyms: EPO, epoetin, hematopoietin, hemopoietin

Product Description
Recombinant human erythropoietin (EPO) is expressed in human HEK 293 cells as a glycoprotein with a calculated molecular mass of ~18 kDa. This protein is manufactured in human cells using an all-human production system, with full chemically defined ingredients and with no serum. The expression system of the human cells allows human-like glycosylation and folding, and often supports better stability of the protein in culture. The protein is produced with no artificial tags.

Erythropoietin (EPO) is a glycoprotein hormone, known for its erythropoietic activity. It is used as treatment for anemia in humans with renal failure or cancer. EPO also reduces the number of blood transfusions required for premature infants and surgeries.[1-2]

EPO consists of 165 amino acids and has a high carbohydrate content, of both N-linked and O-linked types. The oligosaccharide chains are responsible for EPO production, secretion, longevity, and functioning. The biological activity of EPO depends upon two disulfide bonds, one formed between Cys^{7} and Cys^{160} and the other between Cys^{29} and Cys^{33}.[3-4] Thus, EPO proper folding, glycosylation, and disulfide bonds formation are crucial for its function.

EPO was found to downregulate HIF-1α in the diabetic rat model.[5] EPO helped maintain the homeostasis of intracellular zinc in retinal cells, altered as a result of diabetes, by restoring Zinc transporter 8 (ZnT8) expression.[5]

This product is supplied as a powder lyophilized from 0.22 μm filtered solution in PBS.

The biological activity of recombinant human EPO is tested in culture by measuring its ability to stimulate proliferation of the human TF-1 Erythroleukemic cell line.

ED_{50}: ≤2.5 ng/ml

The ED_{50} is defined as the effective concentration of EPO that elicits a 50% increase in cell growth in a cell based bioassay.

Purity: ≥98.0% (SDS-PAGE)

Endotoxin level: ≤1.00 EU/µg (LAL)

Uniprot: P01588

Precautions and Disclaimer
For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
Briefly centrifuge the vial before opening. Reconstitute in water to a concentration of 0.1 mg/mL. Do not vortex. This solution can be stored at 2–8 °C for up to 1 week. For extended storage, it is recommended to store in working aliquots at –20 °C.

Storage/Stability
Store the lyophilized product at –20 °C. The product is stable for at least 2 years as supplied.

References

1. Palazzuoli, A. et al., The role of erythropoietin stimulating agents in anemic patients with heart failure: solved and unresolved questions. *Ther. Clin. Risk Manag.,* **10**, 641-650 (2014).
2. Ohlsson, A., and Aher, S.M., Early erythropoietin for preventing red blood cell transfusion in preterm and/or low birth weight infants *Cochrane Database Syst. Rev.,* **4**, Article CD004863 (2014).
3. Maiese, K. et al., Raves and risks for erythropoietin. *Cytokine Growth Factor Rev.,* **19**, 145-155 (2008).
4. Maiese, K. et al., Erythropoietin, forkhead proteins, and oxidative injury: biomarkers and biology. *Scientific World Journal*, **9**, 1072-1104 (2009).
5. Xu, G. et al. Erythropoietin Protects Retinal Cells in Diabetic Rats Through Upregulating ZnT8 via Activating ERK Pathway and Inhibiting HIF-1α Expression. Investigative Ophthalmology & Visual Science, **56(13)**, 8166-8178 (2015).

PG,NA,MAM 05/19-1