BioVendor - Laboratorní medicína a.s.
Karásek 1767/1
621 00 Brno-Řečkovice a Mokrá Hora

Date of issue: 19.09.2018

PRODUCT DATASHEET

Lecithin-Cholesterol Acyltransferase Human HEK293

Cat. No.: RD172122025-HEK
Type: Recombinant protein
Size: 0.025 mg
Source: HEK293
Species: Human

Description

Total 429 AA. MW: 48.5 kDa (calculated). UniProtKB/Swiss-Prot P04180 Phe25-Glu440 with N-Terminal Flag-tag, 13 extra AA (highlighted).

Other names

LCAT, Phosphatidylcholine-sterol acyltransferase, Phospholipid-cholesterol acyltransferase

Introduction to the molecule

Human Lecithin: cholesterol acyltransferase (LCAT) is a glycoprotein with a molecular mass of approximately 58 kDa. It is the key enzyme responsible for esterification of free cholesterol to cholesteryl esters in circulating plasma lipoproteins, primarily in high density lipoprotein (HDL). The tertiary structure of LCAT is maintained by two disulfide bridges, similar to lipases and other proteins of the α/β hydrolase fold family. Mature LCAT protein is synthesized from a 440 residue precursor by following cleavage of a 24 residue signal peptide. The mature protein contains 416 amino acids and is heavily N-glycosylated. LCAT is abundant in blood plasma and it is present in other organs, including liver, brain and testes. In plasma LCAT is associated with ApoD which frequently co-purify. A recent study suggests that LCAT can act as an antioxidant and prevent the accumulation of oxidized lipid in plasma lipoproteins. LCAT performs a central role in HDL metabolism by catalyzing the formation of cholesteryl esters on HDL through the transfer of fatty acids from the sn-2 positions of phosphatidylcholine (PC) to cholesterol. The role of LCAT in atherosclerosis is unclear. Dullaart et al. showed that plasma LCAT activity is elevated in metabolic syndrome and may be a marker of subclinical atherosclerosis. Sethi et al. demonstrated that low lecithin-cholesterol acyltransferase (LCAT) activities and high pre-ß1-HDL concentrations are strong positive risk markers for ischemic heart disease and are independent of HDLcholesterol. Miida et al. demonstrated that plasma pre β1-HDL concentration increase in subjects with low LCAT activity. They also reported that patients with coronary artery diseae (CAD) had higher pre-ß1-HDL concentrations than did normolipidemic subjects. Holleboom et al. showed that low plasma LCAT levels (reflecting low LCAT activity) are not associated with an increased risk of future (CAD) in the general population. However, other studies showed a positive association of LCAT levels with carotid atherosclerosis in patients with the metabolic syndrome as well as in control subjects whereas, LCAT activity was reduced in patients with CAD and in patients with acute myocardial infarction. In summary, LCAT activity might be reduced in the acute phase of a myocardial infarction. Mutations of LCAT on chromozome 16 resulting in homozygous or compound heterozygous form can cause two major phenotypes: FLD (familial LCAT deficiency) and FED (Fish Eye Disease). Patients with FLD have a complete loss of both α-LCAT activity and β-LCAT activity and an increased proportion of unesterified cholesterol in plasma. In FED is partial loss of α-LCAT activity with normal elevated free cholesterol in plasma. Both FLD and FED are characterized by the development of corneal opacities.

Research topic

Cardiovascular disease, Lipoprotein metabolism

Amino Acid sequence

HVDYKDDDDK PAGFWLLNVL FPPHTTPKAE LSNHTRPVIL VPGCLGNQLE AKLDKPDVVN WMCYRKTEDF FTIWLDLNMF LPLGVDCWID NTRVVYNRSS GLVSNAPGVQ IRVPGFGKTY SVEYLDSSKL AGYLHTLVQN LVNNGYVRDE TVRAAPYDWR LEPGQQEEYY RKLAGLVEEM HAAYGKPVFL IGHSLGCLHL LYFLLRQPQA WKDRFIDGFI SLGAPWGGSI KPMLVLASGD NQGIPIMSSI KLKEEQRITT TSPWMFPSRM AWPEDHVFIS TPSFNYTGRD FQRFFADLHF EEGWYMWLQS RDLLAGLPAP GVEVYCLYGV GLPTPRTYIY DHGFPYTDPV GVLYEDGDDT VATRSTELCG LWQGRQPQPV HLLPLHGIQH LNMVFSNLTL EHINAILLGA YRQGPPASPT ASPEPPPPE

Purity

Purity as determined by densitometric image analysis: >95%

BioVendor - Laboratorní medicína a.s.
Karásek 1767/1
621 00 Brno-Řečkovice a Mokrá Hora, Czech Republic

Phone: +420-549-124-185, Fax: +420-549-211-460
E-mail: info@biovendor.com, sales@biovendor.com
Web: www.biovendor.com

There are BioVendor branches and distributors near you.
To find the office closest to you, visit www.biovendor.com/contact

Endotoxin
< 0.1EU/ug

Formulation:

Filtered (0.4 µm) and lyophilized from 0.5 mg/ml in 20mM Tris buffer, 50mM NaCl, pH 7.5

Reconstituion:
Add deionized water to prepare a working stock solution of approximately 0.5 mg/mL and let the lyophilized pellet dissolve completely. Product is not sterile! Please filter the product by an appropriate sterile filter before using it in the cell culture.

Shipping
At ambient temperature. Upon receipt, store the product at the temperature recommended below.

Storage, Stability/Shelf Life
Store the lyophilized protein at –80 °C. Lyophilized protein remains stable until the expiry date when stored at –80 °C. Aliquot reconstituted protein to avoid repeated freezing/thawing cycles and store at –80 °C for long term storage. Reconstituted protein can be stored at 4 °C for a week.

Quality control
BCA to determine quantity of the protein.

SDS PAGE to determine purity of the protein.

LAL to determine quantity of endotoxin.

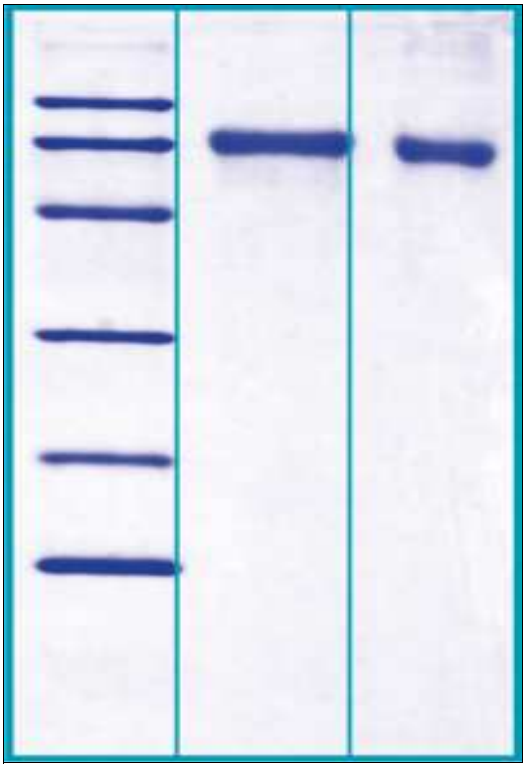
Applications
Cell culture and/or animal studies, ELISA, Western blotting

BioVendor - Laboratorní medicína a.s.
Karásek 1767/1
621 00 Brno-Řečkovice a Mokrá Hora, Czech Republic

Phone: +420-549-124-185, Fax: +420-549-211-460
E-mail: info@biovendor.com, sales@biovendor.com
Web: www.biovendor.com
There are BioVendor branches and distributors near you.
To find the office closest to you, visit www.biovendor.com/contact

BioVendor - Laboratorní medicína a.s.
Karásek 1767/1
621 00 Brno-Řečkovice a Mokrá Hora

Date of issue: 19.09.2018



14% SDS-PAGE separation of Human LCAT
1. M.W. marker – 14, 21, 31, 45, 66, 97 kDa
2. reduced and heated sample, 5µg/lane
3. non-reduced and non-heated sample, 5µg/lane

BioVendor - Laboratorní medicína a.s.
Karásek 1767/1
621 00 Brno-Řečkovice a Mokrá Hora, Czech Republic

Phone: +420-549-124-185, Fax: +420-549-211-460
E-mail: info@biovendor.com, sales@biovendor.com
Web: www.biovendor.com
There are BioVendor branches and distributors near you.
To find the office closest to you, visit www.biovendor.com/contact