

# Human Recombinant Endocan / ESM-1 (20 kDa)

## Without DS / CS chain attached to the serine 137

### Essential Notes

**Cat. Number:** LIP-1002-50U

**Biomolecule:** Endocan without DS / CS chain

**Clone:** 47.3

**Size:** 50 µg / 100 µL

**Formulation:** solution in PBS

**Storage:** -80°C

**Applications:** Elisa, Bioassays, standard for quantification

For research use only  
Not for use in human or animals

### Description

Endocan also called endothelial cell specific molecule 1 (ESM-1) is a proteoglycan of 50 kDa carrying a unique chain of glycosaminoglycan of chondroitin B / dermatan sulfate type (Bechard et al. 2001; Sarrazin et al. 2010). This CS / DS proteoglycan is a biomarker of endothelial dysfunction in cancer and sepsis.

### Source

The 20 kDa recombinant human endocan / ESM-1 is produced in HEK293 cells transformed with cDNA encoding for human endocan S137A mutant (Bechard et al. 2001). Recombinant endocan produce by this cell line was purified by ion exchange chromatography followed by affinity chromatography using a monoclonal anti-human endocan antibody. These engineered cells released a 20 kDa endocan without the glycosaminoglycan chain.

### Molecular Mass

Human endocan from this cell line called clone 47.3 is secreted as a 20 kDa protein.

### Formulation

Fifty µg of recombinant endocan / ESM-1 in a solution in phosphate buffer saline (PBS) at 100 µg/mL.

### Storage

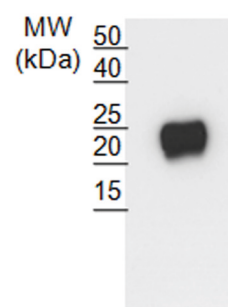
Human endocan / ESM-1 can be aliquoted upon reception and stored frozen at -80°C until final use. **Avoid repeated freeze-thaw cycles.**

### Applications

**Bioassays:** Optimal dilutions should be determined by each laboratory for each application.

**Western Blot:** Can be used as a standard for molecular weight (20 kDa).

**Elisa:** Can be used for the quantification of human endocan in serum, plasma or culture supernatant as a standard.



Western blot analysis of Recombinant Human Endocan devoids of its glycan chain (reduced condition). Endocan 20 kDa was detected using the purified mAb MEP14.

## References

- Lassalle et al. (1996)** ESM-1 is a novel human endothelial cell-specific molecule expressed in lung and regulated by cytokines. *J. Biol. Chem.* 271:20458-20464.
- Bechard et al. (2001a)** Endocan is a novel CS/DS proteoglycan that promotes HGF/SF mitogenic activity. *J. Biol. Chem.* 276:48341-48349.
- Sarrazin et al. (2010a)** Characterization and binding activity of the chondroitin/dermatan sulfate chain from Endocan, a soluble endothelial proteoglycan. *Glycobiology.* 20:1380-1388.
- Scherpereel et al. (2003)** Overexpression of endocan induces tumor formation. *Cancer Res.* 63:6084-6089.

## BACKGROUND

Endocan, also known as endothelial cell-specific molecule (ESM-1), was originally discovered in endothelial cells from the lungs by Lassalle and collaborators (Lassalle et al. 1996). Structurally, endocan is a dermatan sulfate proteoglycan of 50 kDa that is freely circulating in blood (Bechard et al. 2001a; Sarrazin et al. 2010a). Endocan / ESM-1 binds CD11a/CD18 integrin (also called LFA-1 for Leukocyte Function-associated Antigen-1) on human leukocytes inhibiting consequently its binding to ICAM-1 and transendothelial migration (Bechard et al. 2001b; De Freitas Caires et al. 2009). Moreover, endocan / ESM-1 has been recently described as a biomarker of tip cells (Sarrazin et al. 2010b). The expression of endocan / ESM-1 is upregulated by pro-inflammatory molecules such as tumor necrosis factor alpha (TNF $\alpha$ ), and pro-angiogenic molecules such as vascular endothelial growth factor (VEGF) and fibroblast growth factor 2 (FGF-2) (Grigoriu et al. 2006; Sarrazin et al. 2006; Maurage et al. 2009). Endocan / ESM-1 binds via its dermatan sulfate chain to hepatocyte growth factor/scatter factor (HGF/SF) (Bechard et al. 2001a; Sarrazin et al. 2010b). Elevated blood levels of endocan / ESM-1 has been reported in patients with lung and kidney cancers as well as in patients with severe sepsis (Bechard et al. 2001b; Scherpereel et al. 2003; Grigoriu et al. 2006; Scherpereel et al. 2006; Sarrazin et al. 2010b; Leroy et al. 2010).

## Endocan Background Bibliography

- Abid et al. (2006)** Vascular endocan is preferentially expressed in tumor endothelium. *Microvasc. Res.* 72:136-145.
- Bechard et al. (2001a)** Endocan is a novel CS/DS proteoglycan that promotes HGF/SF mitogenic activity. *J. Biol. Chem.* 276:48341-48349.
- Bechard et al. (2001b)** Human ESM-1 binds directly to the integrin CD11a/CD18 (LFA-1) and blocks binding to ICAM-1. *J. Immunol.* 167:3099-3106.
- Lassalle et al. (1996)** ESM-1 is a novel human endothelial cell-specific molecule expressed in lung and regulated by cytokines. *J. Biol. Chem.* 271:20458-20464.
- Leroy et al. (2010)** Vascular endocan (ESM-1) is markedly overexpressed in clear cell renal cell carcinoma. *Histopathology* 56:180-187.
- Maurage et al. (2009)** Endocan expression and localization in human glioblastomas. *J. Neuropathol. Exp. Neurol.* 68:836-844.
- Sarrazin et al. (2006)** Endocan or endothelial cell specific molecule-1 (ESM-1): a potential novel endothelial cell marker. *BBA Reviews* 1765:25-37.
- Sarrazin et al. (2010a)** Characterization and binding activity of the chondroitin/dermatan sulfate chain from Endocan, a soluble endothelial proteoglycan. *Glycobiology.* 20:1380-1388.
- Sarrazin et al. (2010b)** Endocan as a biomarker of endothelial dysfunction in cancer. *J. Canc. Sci. Ther.* 2:47-52.
- Scherpereel et al. (2003)** Overexpression of endocan induces tumor formation. *Cancer Res.* 63:6084-6089.
- Scherpereel et al. (2006)** Endocan, a new endothelial marker in human sepsis. *Crit. Care Med.* 34:532-537.
- Tsai et al. (2002)** Cloning and characterization of the human lung ESM-1 promoter. *J. Vasc. Res.* 39:148-159.

## Companion products

- Anti-human endocan/ESM-1 mAb (C-ter) ; clone MEP14 : **LIA-1001**
- Anti-human endocan/ESM-1 mAb (N-ter) ; clone MEP21 : **LIA-0902**
- DIYEK EndoMark H1 (ImmunoAssay against human endocan) : **LIK-1101**
- Dermatan sulfate chains from recombinant human endocan : **LIDS-1001**
- Human recombinant Endocan / ESM-1 50 kDa : **LIP-1001**

**Address :** Lunginnov s.a.s, Campus de l'Institut Pasteur de Lille, 1 rue du Pr Calmette, 59000 LILLE, France  
**Supports & Orders:** [www.lunginnov.com](http://www.lunginnov.com)

Tel: (33) 320 877 211 Fax: (33) 320 877 884