Biotinylated Recombinant Human R-Spondin 1

Catalog Number: BT4645B

DESCRIPTION

Source	Chinese Hamster Ovary cell line, CHO-derived human R-Spondin 1 protein Ser21-Ala263 Accession # Q2MKA7.1
N-terminal Sequence Analysis	Ser21 & Arg31
Structure / Form	Biotinylated via amines
Predicted Molecular Mass	25.6 kDa

SPECIFICATIONS

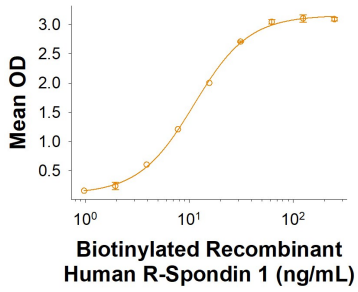
SDS-PAGE	29-42 kDa, under reducing conditions.
Activity	Measured by its binding ability in a functional ELISA. When Recombinant Human Lgr5/GPR49 Fc Chimera (Catalog # 8078-GP) is immobilized at 2 µg/mL (100 µL/well), Biotinylated Recombinant Human R-Spondin 1 (Catalog # BT4645B) binds with an ED_{50} of 4.50-54.0 ng/mL.
Endotoxin Level	<0.10 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 250 µg/mL in PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	**Use a manual defrost freezer and avoid repeated freeze-thaw cycles.** • 12 months from date of receipt, -20 to -70 °C as supplied. • 1 month, 2 to 8 °C under sterile conditions after reconstitution. • 3 months, -20 to -70 °C under sterile conditions after reconstitution.

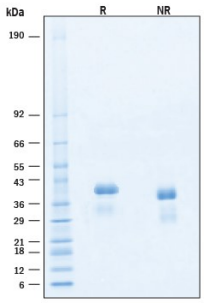
DATA

Binding Activity



Biotinylated Recombinant Human R-Spondin 1 Protein Binding Activity. When Recombinant Human Lgr5/GPR49 Fc Chimera (Catalog # 8078-GP) is immobilized at 2 µg/mL (100 µL/well), Biotinylated Recombinant Human R-Spondin 1 Protein (Catalog # BT4645B) binds with an ED_{50} of 4.50-54.0 ng/mL.

SDS-PAGE



Biotinylated Recombinant Human R-Spondin 1 Protein SDS-PAGE. 2 µg/lane of Biotinylated Recombinant Human R-Spondin 1 Protein (Catalog # BT4645B) was resolved with SDS-PAGE under reducing (R) and non-reducing (NR) conditions and visualized by Coomassie® Blue staining, showing bands at 29-42 kDa.

Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 Canada TEL 855 668 8722 China TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449

Biotinylated Recombinant Human R-Spondin 1

Catalog Number: BT4645B

BACKGROUND

R-Spondin 1 (RSPO1), also known as Cristin 3, is a 27 kDa secreted protein in the R-Spondin family of Wnt/β-catenin signaling regulators (1). These proteins contain two adjacent cysteine-rich furin-like domains followed by a thrombospondin (TSP-1) motif and a region rich in basic residues. Mature human R-Spondin 1 shares 87% amino acid sequence identity with mouse and rat R-Spondin 1 (2). Alternative splicing generates additional isoforms that have a substituted N-terminus or lack the TSP-1 domain. R-Spondin 1 enhances canonical Wnt/β-catenin signaling by competing with the Wnt antagonist Dkk-1, binding to Frizzled-8, Kremen, LRP-6, Lgr4, Lgr5, and Lgr6, and enhancing cell surface availability of Wnt receptors (3-11). R-Spondin 1 functions in dorsal neural tube development (12) as well as male and female germ cell development (7, 10, 13). It also induces bone formation (6), intestinal crypt cell proliferation (14), angiogenesis (7, 15), and insulin secretion from pancreatic beta cells (11). Interest in R-Spondin 1 as a cell culture supplement has grown with the expansion of the organoid field. R-Spondin 1 is widely used in organoid cell culture workflows as a vital component that promotes both growth and survival of 3D organoids (16). Over the last several years, the understanding of the regulatory mechanisms and functional roles of RSPOs in many biological contexts has increased. Particularly, because a leucine-rich repeat containing G protein-coupled receptor 5 (LGR5), a stem cell marker originally identified as a marker for intestinal stem cells, and two closely related proteins, LGR4 and LGR6, were identified as cognate receptors for RSPOs, significant research progress has been made in understanding the functional roles of RSPO/LGR signaling in stem cell biology (17).

References:

1. Jin, Y.R. and J.K. Yoon (2012) Int. J. Biochem. Cell Biol. **44**:2278.
2. Chen, J-Z. *et al.* (2002) Mol. Biol. Rep. **29**:287.
3. Binnerts, M.E. *et al.* (2007) Proc. Natl. Acad. Sci. USA **104**:14700.
4. Nam, J.-S. *et al.* (2006) J. Biol. Chem. **281**:13247.
5. Wei, Q. *et al.* (2007) J. Biol. Chem. **282**:15903.
6. Kronke, G. *et al.* (2010) Arthritis Rheum. **62**:2303.
7. Caruso, M. *et al.* (2015) PLoS One **10**:e0124213.
8. Hao, H.-X. *et al.* (2012) Nature **485**:195.
9. de Lau, W. *et al.* (2011) Nature **476**:293.
10. Chassot, A.-A. *et al.* (2011) PLoS One **6**:e25641.
11. Wong, V.S.C *et al.* (2010) J. Biol. Chem. **285**:21292.
12. Kamata, T. *et al.* (2004) Biochim. Biophys. Acta **1676**:51.
13. Chassost, A.-A. *et al.* (2012) Development **139**:4461.
14. Kim, K.-A. *et al.* (2005) Science **309**:1256.
15. Gore, A.V. *et al.* (2011) Development **138**:4875.
16. Drost and Clevers. (2018) Nature Reviews Cancer **18**:407.
17. Raslan, H. *et al.* (2019) J. Biochem. Biocell. **106**:26-34.

bio-techne®
Global bio-techne.com info@bio-techne.com techsupport@bio-techne.com TEL +1 612 379 2956
USA TEL 800 343 7475 **Canada** TEL 855 668 8722 **China** TEL +86 (21) 52380373
Europe | Middle East | Africa TEL +44 (0)1235 529449