Product specification

Product number:	**GL-010**
Product name:	**RSL lectin produced recombinantly in *E. coli*, unconjugated**
Form:	Lyophilized powder
Unit size:	1 mg, 5 mg, 10 mg
Sugar specificity:	L-fucose (see the detailed information below)
Protein sequence:	SSVQTAATSWGTVPSIRVYTANNGKITERCWDGKGWYTGAFNEPGDNVSVTSWLVGSAIHIRVY ASTGTTTTEWCWDGNGWTKGAYTATN
Storage conditions:	For long-term storage, keep the freeze-dried lectin at -20 °C. After dissolving, store the sample in the fridge.

This product is for R&D use only. Not for human or animal use.

Basic information:

Name:	RSL	Molecular weight (monomer):	9726.6 Da
Organism:	*Ralstonia solanacearum*	Extinction coefficient:	44460 M^{-1} cm^{-1}
Expression host:	*Escherichia coli*	Oligomeric state:	trimer
Tags:	no		

Carbohydrate specificity:

RSL binds L-fucose, methyl-fucoside, and a wide range of fucosylated oligosaccharides with terminal fucose bound through α1-2, α1-3, α1-4, and α1-6 linkages. β-fucosides are also recognized, albeit with lower affinities. In general, shorter and non-branched glycans are preferred over larger structures. RSL binds blood group trisaccharides (A, B, H type II), and Lewis epitopes. In addition, RSL binds xyloglucans (fucosylated plant polysaccharides) [1-2].

Ion dependency: no Glycan array data available at functionalglycomics.org

Stability:

Stable in a range of neutral and slightly acidic buffers. For example, Tris, Hepes, phosphate, and acetate are suitable buffers for RSL. Avoid extreme pH (below 4 or above 10). After reconstitution in neutral pH buffers, the protein should be stable in the fridge for weeks. Adding sodium azide (0.02%) is recommended to avoid microbial growth.

T_m = 83 °C (nanoDSF, PBS, pH 7.5)

Applications and biological effects:

Lectin RSL can detect fucosylation of proteins, cells, and tissues in lectin blotting, fluorescence microscopy, flow cytometry, or lectin histochemistry experiments. Also, it can be used to isolate fucosylated glycans or glycoproteins. RSL is found in commercial lectin microarrays.

The binding of RSL is known to induce the invagination of artificial lipid membranes containing fucosylated glycolipids and rapid lectin internalization upon binding to endothelial cells (H1299 cell line) [3].

References:

1. Kostlánová *et al*, *J Biol Chem*, 2005, doi: 10.1074/jbc.M505184200
2. Audfray *et al*, *J Biol Chem*, 2012, doi: 10.1074/jbc.M111.314831
3. Arnaud *et al*, *ACS Chem Biol*, 2013, doi: 10.1021/cb400254b

Guidelines for reconstitution of the lyophilized product

Wear protective gloves and clothing when handling the product. Respiratory protection should be worn when working with lyophilized lectin.

1. Allow the product to equilibrate to room temperature before opening the vial.
2. The product is offered in different amounts. For 1 mg, we recommend briefly centrifuging the vial and dissolving the whole lyophilisate. For 5 mg and 10 mg products, the desired quantity of freeze-dried protein can be transferred to a clean tube and dissolved there.
3. Add the desired solvent volume (see below for buffer recommendation), and allow the sample to reconstitute in the fridge (2 hours are recommended). If the undissolved particles are observed, let the sample dissolve at room temperature with gentle agitation, or for a prolonged period (overnight) in the fridge. Do not vortex.
4. Centrifuge the sample on a bench-top centrifuge (15 min, max speed) to remove the eventual insoluble material and check the concentration of the reconstituted lectin by measuring the absorbance at 280 nm (e.g., by Nanodrop).

In some instances, it may be challenging to dissolve the lyophilized powders completely, and the reconstitution efficiency may vary for different buffers. Therefore, 4GLYCO provides their customers with the output of testing their lectins in the most common solvents. The data can help customers select the appropriate buffer.

solvent	RSL dissolved
water (MilliQ)	96 %
20 mM Na acetate, pH 4.5	95 %
20 mM MES, pH 6.0	96 %
20 mM Tris, pH 7.5	93 %
50 mM Na borate, pH 8.5	98 %
20 mM Na acetate, 150 mM NaCl, pH 4.5	96 %
20 mM MES, 150 mM NaCl, pH 6.0	93 %
20 mM Tris, 150 mM NaCl, pH 7.5	97 %
20 mM Hepes, 150 mM NaCl, pH 7.5	88 %
PBS	96 %

The data were obtained by dissolving 0.5 mg of fresh, freeze-dried lectin in 500 µl of the buffers (2 hours, 4 °C), centrifuging, and measuring the lectin concentration in the supernatant spectrophotometrically.

Please note that the data are presented to compare different solvents. The absolute numbers may vary due to various factors.