Description

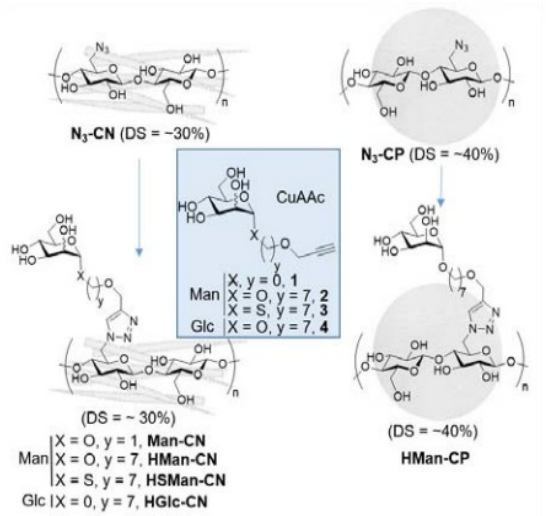
FimH lectin (or type 1 fimbrial lectin) is a lectin-like protein that is incorporated into the tip of surface hair-like structures of *E. Coli* and other enterobacteria. FimH plays crucial role in bacterial adhesions and diseases (especially in extra intestinal locations such as the urinary bladder) through interaction with glycoproteins carrying terminally exposed mannose and exhibits higher affinity for α1,3-linked mannobioses than others mannobioses.

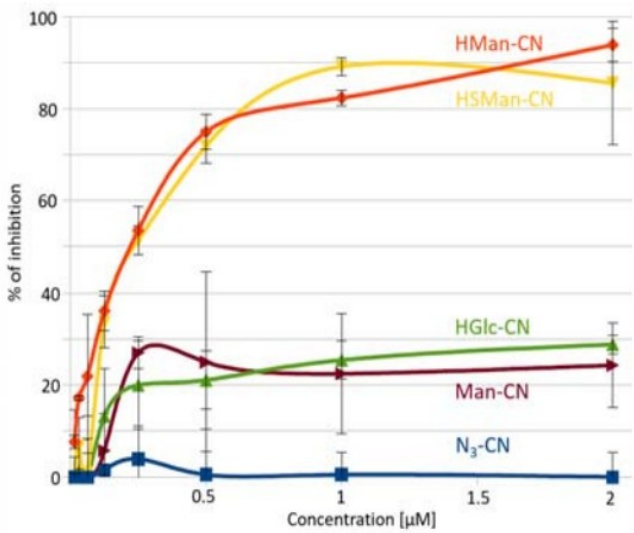
Applications

Determination of FimH antagonists

Cauwel, M. *et al.*[1]

FimH LEctPROFILE® kit was used for the screening and selection of several manoside ligands for the development of new adherent-invasive *E.coli* strains (AIEC) nanosensors (*See Figure below*).



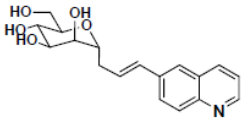
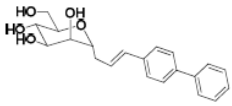
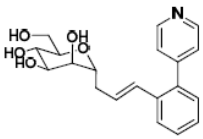
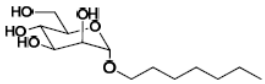
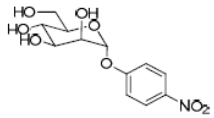
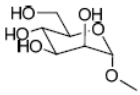


Krammer, E. M. *et al.*[2]

FimH LEctPROFILE® kit was used to study FimH oligomannosides binding. The results obtained with the FimH LEctPROFILE® kit were compared with surface plasmon resonance (SPR) technology and show the same results of oligomannosides binding : Manα1,3Man > Manα1,2Man > Manα1,4Man > Manα1,6Man.

Moussavifar, L. *et al.*[3]

FimH LEctPROFILE® kit was recently used for the characterisation of several antagonist for the Uropathogenic *Escherichia coli* (UPEC) type-1 fimbrial adhesin (FimH). These ligands which are alternatives for antibiotic therapies and prophylaxis against acute or recurrent urinary tract infections (UTIs) caused by UPECs, show IC50 for some of them in the nanomolar range.

Cpd	Structure	IC_{50} (nM)	RIP [a]	cLogP
11		3.17 ± 2.3	887	1.16
18		30.28 ± 9.0	93	3.16
20		0.82 ± 0.4	3428	1.66
21		19.4 ± 5.2	145	1.44
22		74.13 ± 48.1	38	0.02
23		2810.74 ± 2546	1	−1.58

References

1. M. Cauwel, A. Sivignon, C. Bridot, M. C. Nongbe, D. Deniaud, B. Roubinet, L. Landemarre, F-X Felpin, J. Bouckaert, N. Barnich and S. Gouin. *Heptylmannose-functionalized cellulose for the binding and specific detection of pathogenic E.coli. Chem. Commun.,* **2019**, *55*, 10158-10161.

2. E.M. Krammer, C. Bridot, S. Serna, B. Echeverria, S. Semwal, B. Roubinet, K. van Noort, R.H. Wilbers, G. Bourenkov, J. de Ruyck, L. Landemarre, N. Reichardt, J. Bouckaert. *Structural insights into a cooperative switch between one and two FimH bacterial adhesins binding pauci- and high-mannose type N-glycan receptors. J. Biol. Chem*., **2023**, 299, 104627.

3. L. Mousavifar, M. Sarshar, C. Bridot, S. Scribano, C. Ambrosi, A.T. Palamara, B. Roubinet, L. Landemarre, J. Boukaert, R. Roy. Further insights in the design of potent uropathogenic E.coli FimH antagonists, *Pharmaceutics*, **2023**, *15*, 527.