

Pmst2 - A Novel Pasteurella Multocida Glycolipid Alpha-2-3-Sialytransferase

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ABSTRACT

Researchers at the University of California, Davis have developed a novel sialyltransferase which recognizes glycolipids as acceptor substrates and can be used as a valuable catalyst for synthesizing sialyl glycolipids.

FULL DESCRIPTION

Sialic acids are a family of monosaccharides that are commonly found as terminal residues on cell surface glycoproteins/glycolipids of higher animals. They have a vital role in cellular communication and recognition. To a much lesser degree, they are also found in microorganisms and their presence is often linked with pathogenicity.

UC Davis researchers have discovered a novel *Pasteurella multocida* alpha-2-3-sialyltransferase 2 (PmST2) that prefers to use lactosyl lipids and other lipid-containing galactosides as acceptor substrates. PmST2 is an enzyme that catalyzes the transfer of activated sialic acids (i.e., CMP-Neu5Ac) to appropriate acceptors, forming alpha-2-3-linked sialosides. PmST2 has been used successfully in preparative scale synthesis of sialyllactosyl sphingosine (lyso-GM3) and its derivatives. These derivatives are also important biological probes that can be used as intermediates for synthesizing more complex gangliosides. The PmST2 has the ability to distinguish between oligosaccharides with or without the lipid portion. The oligosaccharides with attached long hydrocarbon chains (such as that of fatty acids or sphingosine) are much better substrates for the enzyme than oligosaccharides.

APPLICATIONS

Useful for:

- Catalyzing the synthesis of sialyl glycolipids, such as lyso-GM3, GM3, and their derivatives (e.g. gangliosides).

FEATURES/BENEFITS

- ▶ PmST2:
- ▶ Specially active for glycolipids: activity stimulated by the recognition of a lipid chain
- ▶ Excellent for use in enzymatic synthesis: lacks sialidase activity
- ▶ Large amounts of PmST2 can be obtained using an *E. coli* expression system by fusing with maltose-binding protein for use in large scale synthesis.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,102,967	08/11/2015	2011-794

RELATED TECHNOLOGIES

- ▶ [Various PMST1 Mutants and the Synthesis of a Library of Sialyl Lewis X Containing Different Sialic Acid Forms](#)

CONTACT

Victor Haroldsen
haroldsen@ucdavis.edu
tel: 530-752-7717.



OTHER INFORMATION

KEYWORDS

Synthesis of sialosides,
sialyltransferase, sialyl
glycolipids,PmST

CATEGORIZED AS

- ▶ **Biotechnology**
 - ▶ Industrial/ Energy
 - ▶ Other
- ▶ **Materials & Chemicals**
 - ▶ Chemicals
- ▶ **Medical**
 - ▶ Research Tools
- ▶ **Research Tools**
 - ▶ Reagents

RELATED CASES

2011-794-0, 2011-790-1,
2011-791-1, 2011-795-1

