Title (en)

HNK-1 SULFOTRANSFERASE AND METHODS OF USE THEREFOR

Title (de)

HNK-1 SULFOTRANSFERASE UND VERFAHREN ZU IHRER VERWENDUNG

Title (fr)

SULFOTRANSFERASE HNK-1 ET SES METHODES D'UTILISATION

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Application

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Abstract (en)

[origin: WO9911796A1] The isolation of a sulfotransferase cDNA via an expression cloning strategy has revealed a sulfotransferase having 356 amino acids, with characteristics of type II transmembrane protein. When expressed as a soluble fusion protein, the enzyme is able to transfer sulfate from a sulfate donor to acceptor substrates containing terminal glucuronic acid. The isolated sulfotransferase can be utilized to prepare proteins having the HNK-1 carbohydrate epitope which is expressed on several neural adhesion glycoproteins and as a glycolipid, and is involved in cell interactions. The glucuronyltransferase and sulfotransferase are considered to be the key enzymes in the biosynthesis of this epitope, because the rest of the structure occurs often in glycoconjugates. Thus, a method is provided for the sulfonation of glucuronic acid, present on cell adhesion and neural cell adhesion molecules, by exposing the neural cell adhesion molecule to a recombinant sulfotranferase enzyme to generate the HNK-1 carbohydrate epitope thereon. Use of isolated or recombinant cDNA to generate the HNK-1 glycosylated recombinant L1-Fc fusion protein can thus facilitate various therapeutic methods where L1, or other members of its immunoglobulin superfamily, can be utilized, especially in the treatment of damaged or diseased neurons. The present invention includes methods of preparation of the sulfotransferase, neural adhesion molecules defining the HNK-1 carbohydrate epitope thereon, methods of promoting neural growth and/or remyelination and/or neuroprotection, and diagnostic utilities all utilizing the molecules and materials disclosed herein.

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