Neuron protecting effect of rare sugars (D-psicose, D-allose)

(Keywords: D-Psicose, D-Allose, Protection of neurons, Neurodegenerative diseases)

Outline of technology

The occurrence of various neurodegenerative diseases such as Parkinson’s disease and prion diseases can be prevented, or, if they have occurred, their progression can be controlled, by protecting neurons from degeneration and consequent apoptosis by utilizing the active oxygen generation inhibiting and scavenger effects of rare sugars (D-psicose, D-allose). Because of these effects, they can also be applied to the preparation of drugs or foods for specified health uses for the treatment of these diseases. When 6-hydroxydopamine (6-OHDA), which specifically destroys dopaminergic neurons and causes Parkinson’s disease, is added (200 μM) to the culture of rat PC12 cells, about 55% of the cells died due to its toxicity. However, when D-psicose was added at 50 mM with 6-OHDA, nearly 75% of the cells survived, indicating its cell protecting effect (Figure). D-Allose also showed a similar effect.

D-Allose and D-psicose were also confirmed to show similar effects in experiments using a model of amyotrophic lateral sclerosis (ALS), which, along with Parkinson’s disease, is a refractory neurological disease. These sugars prevented the pathogenic process, in which spinal motor neurons are degenerated by active oxygen and lost, and prolonged the lives of the animals.

Sales points

- The occurrence of various neurodegenerative diseases such as Parkinson’s disease and prion diseases can be prevented, or, if they have occurred, their progression can be delayed, by protecting neurons from being degenerated and lapsing into apoptosis due to active oxygen production inhibiting and scavenger effects of D-psicose and D-allose.

- D-Allose may be effective for the treatment of amyotrophic lateral sclerosis (ALS), for which there is no effective treatment.

- These sugars may be used for the treatment of all neurological diseases induced by active oxygen (e.g., Alzheimer’s disease).

Expected application fields and products

1. Drugs for the treatment for neurodegenerative disorders
2. Foods for the prevention of neurodegenerative disorders
3. Foods for the prevention of the progression of neurodegenerative disorders

Comparison with existing products

<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Effects on Parkinson’s disease model</td>
</tr>
<tr>
<td>D-Allose, D-Psicose</td>
<td>Effective (D-allose, D-psicose)</td>
</tr>
<tr>
<td>Antiparkinsonian drugs</td>
<td>Effective</td>
</tr>
<tr>
<td>Anti-ALS drug (riluzole)</td>
<td>Not effective</td>
</tr>
</tbody>
</table>

References, patents, etc.


Other matters to note

(Developer’s comment) These sugars may be used for the treatment of all neurological diseases induced by active oxygen (e.g., Alzheimer’s disease).

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