Slowing of the onset and progression of amyotrophic lateral sclerosis with rare sugars

Keywords: D-Allose, Amyotrophic lateral sclerosis

Research theme

Outline of technology

Amyotrophic lateral sclerosis (ALS) is a neurodegenerative disease that presents with hand or foot weakness or symptoms of bulbar palsy primarily in the middle or old age. During a course of a few years, limb weakness and atrophy progress, and death is caused by respiratory muscle paralysis.

When the therapeutic effect of D-allose on transgenic mice (an animal ALS model for the search of anti-ALS drugs) was examined, the agent was found to prolong the survival of the animals by delaying the onset of ALS and significantly slowing its progression as shown in the Table.

It was shown to produce this effect by suppressing the release of glutamic acid with motor neuron toxicity and inhibiting the generation of hydrogen peroxide, an active oxygen species with motor neuron toxicity. From these results, D-allose is considered to produce an anti-ALS effect by suppressing the release of glutamic acid and generation of active oxygen species and, thus, preventing death of spinal motor neurons.

Sales points

1. D-Allose can be used for the prevention and treatment of individuals with possible risk of developing ALS
2. D-Allose can be used for the treatment of individuals diagnosed to have ALS.
3. D-Allose is a promising treatment for ALS, which is designated as a specified disease by the Ministry of Health, Labor and Welfare in Japan, and treatments of which are scarce in the world.

Expected application fields and products

1. Drugs
2. Foods and beverages
3. Foods for specified health uses

Comparison with existing products

<table>
<thead>
<tr>
<th></th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum dose</td>
<td>Adverse effects</td>
</tr>
<tr>
<td>D-Allose</td>
<td>2 g/kg</td>
<td>None</td>
</tr>
<tr>
<td>Rilutek</td>
<td>100 mg/day</td>
<td>Severe</td>
</tr>
</tbody>
</table>

References, patents, etc.

Related industrial property rights: PCT/JP2007/056165

Other matters to note

(Developer’s comment)

There are few effective treatments for ALS. While riluzole (commercial name, Rilutek) is marketed as the only drug for the treatment of the disease, its efficacy is unremarkable, simply delaying its progression after the onset. Its action mechanism is considered to be suppression of the release of glutamic acid, but its adverse effects are severe. D-Allose, on the other hand, has another action mechanism of suppressing the generation of active oxygen species and causes few adverse effects, so that it is expected to become an effective treatment.

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