Claims:

[Claim 1]

A liquid preparation comprising:

L-serine or a pharmaceutically acceptable salt thereof as an active component; and

a thickener,

wherein the preparation has L-serine or a pharmaceutically acceptable salt thereof at a concentration of about 50 mg/mL or greater.

[Claim 2]

The liquid preparation of claim 1, wherein L-serine or a pharmaceutically acceptable salt thereof is present at a concentration of about 50 mg/mL to about 500 mg/mL, and optionally about 70 mg/mL to about 300 mg/ml.

[Claim 3]

The liquid preparation of claim 1, wherein the thickener is one selected from the group consisting of agar, bentonite, carbomer, sodium carboxymethyl cellulose, carrageenan, microcrystalline sodium carboxymethyl cellulose, guar gum, hydroxyethyl cellulose, hydroxypropyl cellulose, hypromellose, pectin, polyethylene oxide, povidone, corn starch, potato starch, wheat starch, xanthan gum, gelatin, and a mixture thereof, and optionally the thickener is one selected from the group consisting of sodium carboxymethyl cellulose, povidone, hydroxyethyl cellulose, carbomer, and a mixture thereof.

[Claim 4]

The liquid preparation of claim 3, wherein the liquid preparation has the thickener at a concentration of about 0.5 mg/mL to about 100 mg/mL.

[Claim 5]

The liquid preparation of claim 1, wherein the liquid preparation has a pH of about 4.0 to about 7.0.

[Claim 6]

The liquid preparation of claim 1, wherein the liquid preparation further comprises a buffer, and optionally the buffer is at least one selected from the group consisting of borate, acetate, carbonate, citrate, lactate, and hydrate thereof, preferably the buffer is at least one selected from the group consisting of ammonium carbonate, sodium acetate, potassium acetate, calcium carbonate, calcium lactate, potassium citrate, sodium citrate, sodium bicarbonate, sodium lactate, and hydrate thereof and more preferably the buffer is a pharmaceutically acceptable salt of citric acid or hydrate thereof.

[Claim 7]

The liquid preparation of claim 1, wherein the liquid preparation further comprises a solvent.

[Claim 8]

The liquid preparation of claim 1, wherein the liquid preparation is a syrup.

[Claim 9]

The liquid preparation of claim 2, wherein the liquid preparation further comprises a sweetener and optionally the sweetener is one selected from the group consisting of acesulfame potassium, aspartame, dextrate, dextrose, fructose, high fructose, galactose, maltose, mannitol, maltitol, xylitol, stevia, steviol glycoside, enzymatically modified stevia, saccharin, saccharin calcium, saccharin sodium, sorbitol, sorbitol solution, sucralose, sucrose, white sugar, syrup, simple syrup, honey, and a mixture thereof.

[Claim 10]

The liquid preparation of claim 1, wherein the liquid preparation further comprises an additive selected from the group consisting of a diluent, a solubilizing agent, a flavoring agent, a preservative, a sweetener, an acidifier, a buffer, and a mixture thereof and optionally the preservative is one selected from the group consisting of benzoic acid, sodium benzoate, methyl paraoxybenzoate, ethyl paraoxybenzoate, propyl paraoxybenzoate, butyl paraoxybenzoate, sorbic acid, potassium sorbate, sodium sorbate, chlorobutanol, cresol, chlorocresol, and a mixture thereof.

[Claim 11]

A liquid preparation comprising:

L-serine or a pharmaceutically acceptable salt thereof in an amount of about 50 mg/mL to about 500 mg/mL;

at least one thickener selected from the group consisting of sodium carboxymethyl cellulose, povidone, hydroxyethyl cellulose, and carbomer;

a buffer; and

a solvent.

[Claim 12]

The liquid preparation of claim 11, wherein the liquid preparation has a pH of about 4.0 to about 7.0.

[Claim 13]

The liquid preparation of claim 12, wherein the preparation further comprises one selected from the group consisting of a diluent, an acidifier, a preservative, a sweetener, and a mixture thereof.

[Claim 14]

A liquid preparation comprising:

L-serine or a pharmaceutically acceptable salt thereof in an amount of about 50 mg/mL to about 500 mg/mL;

a thickener selected from sodium carboxymethyl cellulose, povidone, or a mixture thereof;

a buffer, which is a salt of citric acid; and

a solvent, which is one selected from the group consisting of water, purified water, water for injection, Ringer's solution, physiological saline, and a mixture thereof.

[Claim 15]

The liquid preparation according to any one of claims 1 to 14, wherein the liquid preparation is for oral administration.

[Claim 16]

The liquid preparation according to any one of claims 1 to 14, wherein the liquid preparation is a solution.

[Claim 17]

Use of the liquid preparation according to any one of claims 1 to 14 in the manufacture of a medicament for preventing or treating central nervous system diseases, and optionally the central nervous system disease is at least one selected from the group consisting of autism spectrum disorder, Alzheimer's disease, Parkinson's disease, intellectual disability, learning disability, language disorder, attention deficit hyperactivity disorder, emotional disorder, motor disorder, hypoxic-ischemic brain injury, traumatic brain injury, neuroinflammatory disease, cerebrovascular disease, attention disorder, and memory disorder and more optionally the central nervous system disease is autism spectrum disorder .

[Claim 18]

A method for preparing the liquid preparation according to claim 1, the method comprising:

(1) dissolving a thickener in a solvent to prepare a first solution;

(2) adding a pharmaceutically acceptable first additive to the first solution and heating the mixture to prepare a second solution having a pH of about 4.0 to about 7.0 at about 50 °C or greater; and

(3) cooling the second solution, and then dissolving L-serine or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable second additive in the cooled second solution to prepare a third solution.

[Claim 19]

The method of claim 18, wherein the pharmaceutically acceptable first additive comprises at least one selected from the group consisting of an acidifier, a buffer, a solubilizing agent, and a preservative.

[Claim 20]

The method of claim 18, wherein the pharmaceutically acceptable second additive comprises at least one selected from the group consisting of a diluent, a sweetener, a flavoring agent, and a coloring agent.