WHAT IS CLAIMED IS:

1. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

administering a first amount of ornithine phenylacetate to the patient during a first period of time; and

administering a second amount of ornithine phenylacetate to the patient during a second period of time;

wherein the first amount of ornithine phenylacetate is between about 10 g to about 30 g, and the second amount of ornithine phenylacetate is less than the first amount.

2. The method of claim 1, wherein the first period of time is from about 1 hour to about 10 hours.

3. The method of claim 1 or 2, wherein the second period of time is longer than the first period of time, and a total of the first period of time and the second period of time is from about 18 hours to 36 hours.

4. The method of any one of claims 1 to 3, wherein the first amount of ornithine phenylacetate is about 20 g.

5. The method of any one of claims 1 to 4, wherein the first period of time is about 6 hours.

6. The method of any one of claims 1 to 5, wherein the second amount of ornithine phenylacetate is about 15 g.

7. The method of any one of claims 1 to 6, wherein the second period of time is about 18 hours.

8. The method of any one of claims 1 to 7, wherein the second amount of ornithine phenylacetate is administered immediately after the completion of the administration of the first amount of ornithine phenylacetate.

9. The method of any one of claims 1 to 8, wherein the first amount of ornithine phenylacetate is administered by intravenous infusion.

10. The method of any one of claims 1 to 9, wherein the second amount of ornithine phenylacetate is administered by intravenous infusion.

11. The method of any one of claims 1 to 10, further comprising administering a third amount of ornithine phenylacetate immediately following the completion of the administration of the second amount of ornithine phenylacetate during a third period of time.

12. The method of claim 11, wherein the third period of time is from about 2 days to about 10 days.

13. The method of claim 12, wherein the third period of time is about 4 days.

14. The method of any one of claims 11 to 13, wherein the third amount of ornithine phenylacetate administered per day (24 hours) is the same or less than the second amount of ornithine phenylacetate.

15. The method of claim 14, wherein the third amount of ornithine phenylacetate administered per day is about 15 g.

16. The method of any one of claims 11 to 15, wherein the third amount of ornithine phenylacetate is administered by intravenous infusion.

17. The method of any one of claims 1 to 16, wherein the patient is also receiving standard of care.

18. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

selecting a patient in need of treatment of hyperammonemia who is suffering from impaired renal function, wherein said patient has estimated glomerular filtration rate (eGFR) between 15 mL/min/1.73m^2 and 29 mL/min/1.73m^2;

administering a first amount of ornithine phenylacetate to the patient during a first period of time; and

administer a second amount of ornithine phenylacetate to the patient during a second period of time;

wherein the first amount of ornithine phenylacetate is between about 5 g to about 20 g, and the second amount of ornithine phenylacetate is less than the first amount.

19. The method of claim 18, wherein the first period of time is from about 1 hour to about 10 hours and the second period of time is longer than the first period of time.

20. The method of claim 18 or 19, wherein a total of the first period of time and the second period of time is from about 18 hours to 36 hours.

21. The method of any one of claims 18 to 20, wherein the first amount of ornithine phenylacetate is from about 7.5 g to about 15 g.

22. The method of any one of claims 18 to 21, wherein the first period of time is from about 4 to about 6 hours.

23. The method of any one of claims 18 to 22, wherein the second amount of ornithine phenylacetate is from about 7.5 g to about 15 g.

24. The method of any one of claims 18 to 23, wherein the second period of time is from about 12 hours to about 18 hours.

25. The method of any one of claims 18 to 24, wherein the second amount of ornithine phenylacetate is administered immediately after the completion of the administration of the first amount of ornithine phenylacetate.

26. The method of any one of claims 18 to 25, wherein the first amount of ornithine phenylacetate is administered by intravenous infusion.

27. The method of any one of claims 18 to 26, wherein the second amount of ornithine phenylacetate is administered by intravenous infusion.

28. The method of any one of claims 18 to 27, further comprising administering a third amount of ornithine phenylacetate immediately following the completion of the administration of the second amount of ornithine phenylacetate during a third period of time.

29. The method of claim 28, wherein the third period of time is from about 2 days to about 10 days.

30. The method of claim 29, wherein the third period of time is from about 3 days to about 4 days.

31. The method of any one of claims 28 to 30, wherein the third amount of ornithine phenylacetate administered per day (24 hours) is the same or less than the second amount of ornithine phenylacetate.

32. The method of claim 31, wherein the third amount of ornithine phenylacetate administered per day is from about 7.5 g to about 15 g.

33. The method of any one of claims 28 to 32, wherein the third amount of ornithine phenylacetate is administered by intravenous infusion.

34. The method of any one of claims 18 to 33, wherein the patient is also receiving standard of care.

35. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

determining the renal function or receiving information on the renal function of a patient who is in need of treatment of hyperammonemia; and

administering a first amount of ornithine phenylacetate to the patient during a first period of time; wherein the first amount is from about 10 g to about 30 g when the patient's estimated creatinine clearance is greater than 35 mL/min; or

administering a first amount of ornithine phenylacetate to the patient during a first period of time; wherein the first amount is from about 5 g to about 15 g when the patient's estimated creatinine clearance is equal to or less than 35 mL/min/1.73m^2.

36. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

determining the body weight or body size or receiving information on the body weight or body size of a patient who is in need of treatment of hyperammonemia;

administering a first amount of ornithine phenylacetate administered to the patient during a first period of time;

monitoring plasma concentration of phenylacetic acid in the patient; and

adjusting the amount of ornithine phenylacetate administered to the patient during a second period of time based on the plasma concentration of phenylacetic acid.

37. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

determining the degree of hepatic impairment or receiving information on the degree of hepatic impairment of a patient who is in need of treatment of hyperammonemia; and

administering a first amount of ornithine phenylacetate administered to the patient during a first period of time;

monitoring plasma concentration of phenylacetic acid in the patient; and

adjusting the amount of ornithine phenylacetate administered to the patient during a second period of time based on the plasma concentration of phenylacetic acid.

38. The method of any one of claims 1 to 37, further comprising measuring a serum ammonia level of the patient prior to administering the first amount of ornithine phenylacetate to the patient.

39. The method of claim 38, wherein the serum ammonia level of the patient is $\geq$ 21 µmol/L.

40. A method of treating or ameliorating hyperammonemia in a patient in need thereof, comprising:

identifying or selecting a patient having or at risk of having an acute or chronic liver disease or condition;

measuring a serum ammonia level or receiving information on the serum ammonia level of the patient; and

administering a first amount of ornithine phenylacetate to the patient when the patient's serum ammonia level is $\geq$ 21 µmol/L.

41. The method of any one of claims 1 to 40, wherein the patient has cirrhosis.

42. The method of any one of claims 1 to 41, wherein the patient is at risk of hepatic encephalopathy or has had at least one episode of hepatic encephalopathy.

43. The method of any one of claims 1 to 42, wherein the patient is hospitalized due to one or more hepatic encephalopathy episodes.

44. The method of any one of claims 1 to 43, wherein the patient has received at least 4 hours to 6 hours of standard of care prior to the administration of the first amount of ornithine phenylacetate.

45. The method of any one of claims 1 to 44, wherein ornithine phenylacetate is administered as an aqueous solution comprising about 200 mg/mL to about 400 mg/mL ornithine phenylacetate.

46. The method of claim 45, wherein the aqueous solution comprises about 300 mg/mL ornithine phenylacetate.

47. The method of claim 45 or 46, wherein the aqueous solution of ornithine phenylacetate has a pH of at least about 5.

48. The method of claim 47, wherein the aqueous solution of ornithine phenylacetate has a pH range of about 5.4 to about 6.5.

49. A pharmaceutical formulation comprising an aqueous solution of about 200 mg/mL to 400 mg/mL of ornithine phenylacetate and at least one pH adjusting agent, wherein the aqueous solution has a pH of at least about 5.

50. The pharmaceutical formulation of claim 49, wherein the pH of the aqueous solution has a pH range of about 5.4 to about 6.5.

51. The pharmaceutical formulation of claim 49 or 50, wherein the pH adjusting agent is HCl or citric acid, or a combination thereof.

52. The pharmaceutical formulation of any one of claims 49 to 51, wherein the pharmaceutical formulation is stored at a temperature ranging from about 2°C to about 8°C.

53. The pharmaceutical formulation of any one of claims 49 to 52, wherein the aqueous solution comprises about 300 mg/mL of L-ornithine phenylacetate.

54. The pharmaceutical formulation of any one of claims 49 to 53, wherein formulation comprises less than 1% ornithine phenylacetate precipitate.

55. The pharmaceutical formulation of any one of claims 49 to 54, wherein the formulation comprises less than about 0.1% by weight of 3-amino-2-piperidone for up to 6 months at a storage temperature ranging from about 2°C to about 8°C.

56. The pharmaceutical formulation of claim 55, wherein 3-amino-2-piperidone is about 0.05% by weight or below at about 5 °C for up to six months.