"responsive", although patients who exhibit less of a decline would still benefit from BH4 treatment. The seven-day trial showed a sustained decrease in blood Phe concentration in 70% of the patients (14/20) taking 20 mg/kg. Of those 14 patients, 10 (71%) responded favorably to 10 mg/kg/day. Blood tyrosine was observed to increase in some but not all patients; some patients had increases of >80% from baseline tyrosine levels. The individual blood Phe responses to multiple doses of 10 mg/kg BH4 are shown in 11 adults (FIG. **17**) and 9 children (FIG. **19**). The individual blood Phe responses to multiple doses of 20 mg/kg BH4 are shown in 11 adults (FIG. **18**) and in 9 children (FIG. **20**).

Thus, a single-dose loading test was inadequate to identify patients who responded to BH4 treatment with a reduction in blood Phe level of 30% or more. A 7-day loading test successfully identified a high percentage of responsive patients. The 20 mg/kg, 7-day loading test with 6R-BH4 identified 70% of the PKU patients that responded to 20 mg/kg of BH4. Of the 14 responders, 71% also showed a 30% or greater reduction in blood Phe level with the lower dose of 10 mg/kg 6R-BH4.

The references cited herein throughout, to the extent that they provide exemplary procedural or other details supplementary to those set forth herein, are all specifically incorporated herein by reference.

What is claimed is:

1. A method for treating a subject with hyperphenylalaninemia comprising administering to said subject a therapeutically effective amount of tetrahydrobiopterin (BH4) or pharmaceutically acceptable salt thereof, wherein the BH4 is administered orally once per day.

2. The method of claim **1**, wherein the hyperphenylalaninemia results from BH4 deficiency.

3. The method of claim **1**, wherein the hyperphenylalaninemia results from phenylketonuria (PKU).

4. The method of claim **1**, **2** or **3**, wherein said subject is administered BH4 for at least 7 days.

5. The method of claim **1**, **2** or **3**, wherein the subject is administered BH4 for at least 2 weeks.

6. The method of claim **1**, **2** or **3**, wherein said subject is administered BH4 for at least 6 weeks.

7. The method of claim **1**, wherein said subject has a plasma phenylalanine concentration of greater than 180 μM prior to treatment with BH4.

8. The method of claim **1**, wherein said subject has a plasma phenylalanine concentration of greater than 600 μM prior to treatment with BH4.

9. The method of claim **1**, wherein said subject has a plasma phenylalanine concentration of greater than 1000 μM prior to treatment with BH4.

10. The method of claim **1**, wherein said subject has a plasma phenylalanine concentration of greater than 1200 μM prior to treatment with BH4.

11. The method of claim **1**, wherein said administration of BH4 decreases the plasma phenylalanine concentration of said subject to less than 600 μM.

12. The method of claim **1**, wherein said administration of BH4 decreases the plasma phenylalanine concentration of said subject to less than 500 μM.

13. The method of claim **1**, wherein said administration of BH4 decreases the plasma phenylalanine concentration of said subject to less than 360 μM.

14. The method of claim **1**, wherein said BH4 is administered in a daily dose of between about 1 mg/kg to about 30 mg/kg.

15. The method of claim **1**, wherein said BH4 is administered in a daily dose of between about 5 mg/kg to about 30 mg/kg.

16. The method of claim **1**, wherein said BH4 is administered as a crystallized form stable for at least 3 months at 40° C. and 75% relative humidity.

17. The method of claim **16**, wherein said crystallized form of BH4 comprises at least 99.5% pure (6R)-5,6,7,8-tetrahydrobiopterin.

18. The method of claim **16**, wherein said crystallized form of BH4 comprises purified polymorph B, wherein polymorph B, as a hydrochloride salt, exhibits an X-ray powder diffraction pattern with the following characteristic peaks expressed in d-values (A): 8.7 (vs), 5.63 (m), 4.76(m), 4.40 (m), 4.00 (s), 3.23 (s), 3.11 (vs), preferably 8.7 (vs), 6.9 (w), 5.90 (vw), 5.63 (m), 5.07 (m), 4.76 (m), 4.40 (m), 4.15 (w), 4.00 (s), 3.95 (m), 3.52 (m), 3.44 (w), 3.32 (m), 3.23 (s), 3.17 (w), 3.11 (vs), 3.06 (w), 2.99 (w), 2.96 (w), 2.94 (m), 2.87 (w), 2.84 (s), 2.82 (m), 2.69 (w), 2.59 (w), and 2.44 (w).

19. The method of claim **1**, further comprising administering to said subject a protein-restricted diet.

20. The method of claim **19**, wherein said protein-restricted diet is a phenylalanine-restricted diet wherein the total phenylalanine is restricted to less than 600 mg per day.

21. The method of claim **19**, wherein said protein-restricted diet is a phenylalanine-restricted diet wherein the total phenylalanine is restricted to less than 300 mg per day.

22. The method of claim **19**, wherein said subject is a pregnant female.

23. The method of claim **19**, wherein said subject is an infant between the ages of 0 and 3 years of age.

24. The method of claim **19**, wherein said subject is a female of child-bearing age that is contemplating pregnancy.

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