What is claimed is:

1. A composition effective for enhancing energy metabolism comprising:
    a) a phosphodiesterase 5 (PDE 5) inhibitor; and
    b) leucine and/or a leucine metabolite.
2. The composition of claim 1, wherein the composition is formulated as a unit dosage comprising a sub-therapeutic amount of component (a).
3. The composition of claim 2, wherein the sub-therapeutic amount of component (a) is between about 0.05 and about 100 mg.
4. The composition of claim 2, wherein the unit dose comprises a sub-therapeutic amount of the component (a) is between about 0.1 and about 20 mg of sildenafil.
5. The composition of claim 2, wherein the sub-therapeutic amount of component (a) is between about 0.5 - about 50 mg of avanafil, about 0.05 - about 10 mg of iodenafil, about 0.25 - about 25 mg of mirodenafil, about 0.01 - about 1.25 mg of tadalafil, about 0.01 - about 1.25 mg of vardenafil, about 0.5 - about 50 mg of udenafil, about 0.5 - about 50 mg of zaprinst, or about 0.05 - about 100 mg of icariin.
6. The composition of claim 1, wherein the component (b) is free leucine.
7. The composition of claim 1, wherein the component (b) comprises between about 500 to about 2000 mg of free leucine.
8. The composition of claim 1, wherein the component (b) is HMB.
9. The composition of claim 1, wherein the component (b) comprises at least 200 mg of HMB.
10. The composition of claim 1, further comprising an anti-diabetic agent.
11. The composition of claim 1, further comprising a sub-therapeutic amount of an anti-diabetic agent.
12. The composition of claim 10, wherein the anti-diabetic agent is a biguanide or thiazoladinedione.
13. The composition of claim 10, wherein the anti-diabetic agent is metformin.
14. The composition of claim 10, wherein the anti-diabetic agent is rosiglitazone.

15. The composition of claim 13, wherein the anti-diabetic agent comprises at least 25 mg of metformin.
16. The composition of claim 1, further comprising resveratrol.
17. The composition of any of the preceding claims, wherein component (a) comprises between about 0.1 and 10 mg of sildenafil, component (b) comprises between about 500 and 2000 mg of free leucine, and the anti-diabetic agent comprises at least about 250 mg of metformin.
18. The composition of any of the preceding claims, further comprising a non-selective PDE inhibitor.
19. The composition of any of the preceding claims, further comprising a pharmaceutically active agent other than the PDE 5 inhibitor.
20. The composition of any of the preceding claims, wherein the PDE 5 inhibitor is selected from the group consisting of avanafil, iodenafil, mirodenafil, sildenafil, tadalafil, icariin, vardenafil, udenafil, and zaprinst.
21. The composition of any of the preceding claims, wherein the PDE 5 inhibitor is sildenafil.
22. The composition of any of the preceding claims, wherein the composition is substantially free of an amino acid selected from the group consisting of alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, histidine, isoleucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, and valine in free amino acid form.
23. The composition of any of the preceding claims, wherein the composition is formulated for oral consumption.
24. The composition of any of the preceding claims, wherein the composition is formulated as a unit dosage.
25. The composition of any of the preceding claims, wherein the composition is formulated in tablets or capsules.
26. Use of a composition of any of the preceding claims in the manufacture of a medicament for treating obesity, diabetes, or both.

What is claimed is:

1. A composition effective for enhancing energy metabolism comprising:
    a) an amount of a phosphodiesterase 5 (PDE 5) inhibitor; and
    b) at least 500 mg of leucine and/or at least 200 mg of a leucine metabolite selected from the group consisting of beta-hydroxymethylbutyrate (HMB), keto-isocaproic acid (KIC), and alpha-hydroxy-isocaproic.
2. The composition of claim 1, wherein the composition is formulated as a unit dosage comprising a sub-therapeutic amount of component (a).
3. The composition of claim 1, wherein the PDE 5 inhibitor comprises sildenafil.
4. The composition of claim 2, wherein the unit dose comprises a sub-therapeutic amount of the component (a) is between 0.1 and 20 mg of sildenafil.
5. The composition of claim 1, wherein the amount of component (a) is between 0.5 – 50 mg of avanafil, 0.05 – 10 mg of iodenafil, 0.25 – 25 mg of mirodenafil, 0.01 – 1.25 mg of tadalafil, 0.01 – 1.25 mg of vardenafil, 0.5 – 50 mg of udenafil, 0.5 – 50 mg of zaprinst, or 0.05 – 100 mg of icariin.
6. The composition of claim 1, wherein the component (b) is free leucine.
7. The composition of claim 1, wherein the component (b) comprises between about 500 to about 2000 mg of free leucine.
8. The composition of claim 1, further comprising an anti-diabetic agent.
9. The composition of claim 1, further comprising a sub-therapeutic amount of an anti-diabetic agent.
10. The composition of claim 8, wherein the anti-diabetic agent is a biguanide or thiazoladinedione.
11. The composition of claim 8, wherein the anti-diabetic agent comprises at least 25 mg of metformin.
12. The composition of claim 8, wherein the anti-diabetic agent is rosiglitazone.
13. The composition of claim 11, wherein the anti-diabetic agent comprises at least 250 mg of metformin.
14. The composition of claim 1, further comprising resveratrol.
15. The composition of any of the preceding claims, wherein component (a) comprises between 0.1 and 10 mg of sildenafil, component (b) comprises between 500 and 2000 mg of free leucine, and the anti-diabetic agent comprises at least 250 mg of metformin.

16. The composition of any of the preceding claims, further comprising a non-selective PDE inhibitor.
17. The composition of any of the preceding claims, further comprising a pharmaceutically active agent other than the PDE 5 inhibitor.
18. The composition of any of the preceding claims, wherein the composition comprises less than 1% of an amino acid selected from the group consisting of alanine, arginine, asparagine, aspartic acid, cysteine, glutamic acid, glutamine, glycine, histidine, isoleucine, lysine, methionine, phenylalanine, proline, serine, threonine, tryptophan, tyrosine, and valine in free amino acid form.
19. The composition of any of the preceding claims, wherein the composition is formulated for oral consumption.
20. The composition of any of the preceding claims, wherein the composition is formulated in tablets or capsules.
21. Use of a composition of any of the preceding claims in the manufacture of a medicament for treating diabetes.