CLAIMS

1. Medium chain triglycerides (MCT) for use in the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones within at least 3 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of proteins, wherein the Cmax of total ketones is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.

2. Use of medium chain triglycerides (MCT) in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones within at least 3 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of proteins, wherein the Cmax of total ketones is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.

3. The MCT for use of claim 1, or the use of claim 2, wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones within at least 2.5 hours after administration, at least 2 hours after administration, at least 1.5 hours after administration, or at least 1 hour after administration.

~~4. The MCT for use of claim 1 or claim 3, or the use of claim 2 or claim 3, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of total ketones is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.~~

~~5.~~4. Medium chain triglycerides (MCT) for use in the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of b-hydroxybutyrate (BHB) within at least 3 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of

proteins, wherein the Cmax of BHB is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.

~~6.~~5. Use of medium chain triglycerides (MCT) in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of b-hydroxybutyrate (BHB) within at least 3 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of proteins, wherein the Cmax of BHB is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.

~~7.~~6. The MCT for use of claim ~~5~~4, or the use of claim ~~6~~5, wherein the MCT composition provides a maximum serum concentration (Cmax) of BHB within at least 2.5 hours after administration, at least 2 hours after administration, at least 1.5 hours after administration, or at least 1 hour after administration.

~~8. The MCT for use of claim 5 or 7, or the use of claim 5 or claim 6, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of BHB is at least 400 µmol/L, at least 450 µmol/L, or at least 500 µmol/L.~~

~~9.~~7. Medium chain triglycerides (MCT) for use in the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of acetoacetate (AcAc) within at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of proteins, wherein the Cmax of AcAc is at least 50 umol/L, at least 60 umol/L, at least 70 umol/L, at least 80 umol/L, at least 90 umol/L, or at least 100 umol/L.

~~10.~~8. Use of medium chain triglycerides (MCT) in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of acetoacetate (AcAc) within at least 2.5 hours after administration, when administered 30 minutes after a standard meal

and in the substantial absence of proteins, wherein the Cmax of AcAc is at least 50 umol/L, at least 60 umol/L, at least 70 umol/L, at least 80 umol/L, at least 90 umol/L, or at least 100 umol/L.

~~11.~~9. The MCT for use of claim ~~9~~7, or the use of claim ~~10~~8, wherein the MCT composition provides a maximum serum concentration (Cmax) of AcAc within at least 2 hours after administration, at least 1.5 hours after administration, or at least 1 hour after administration.

~~12. The MCT for use of claim 9 or 11, or the use of claim 10 or claim 11, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of AcAc is at least 50 umol/L, at least 60 umol/L, at least 70 umol/L, at least 80 umol/L, at least 90 umol/L, or at least 100 umol/L.~~

~~13.~~10. The MCT for use of any one of claims ~~1, 3-5, 7-9 and 11-12~~ 1, 3, ~~5~~4, ~~7~~6, ~~9~~7, and ~~11~~9, ~~and~~ or the use of any one of claims ~~2-4, 6-8 and 10-12~~ 2, ~~6~~5, ~~10~~8, and ~~11~~9, wherein the MCT pharmaceutical composition is stable at a pH of about 1 to about 3.

~~14.~~11. Medium chain triglycerides (MCT) for use in the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones after at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the presence of proteins, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of total ketones is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.

~~15.~~12. Use of medium chain triglycerides (MCT) in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones after at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the presence of proteins, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of total ketones is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.

~~16.~~13. The MCT for use of claim ~~14~~11, or the use of claim ~~15~~12, wherein the MCT composition provides a maximum serum concentration (Cmax) of total ketones after at least 3.0 hours after administration, after at least 3.5 hours after administration, after at least 4.0 hours after administration, or after at least 5 hours after administration.

~~17. The MCT for use of claim 14 or 16, or the use of claim 15 or claim 16, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of total ketones is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.~~

~~18.~~14. Medium chain triglycerides (MCT) for use in the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of b-hydroxybutyrate (BHB) after at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the presence of proteins, wherein the Cmax of BHB is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.

~~19.~~15. Use of medium chain triglycerides (MCT) in the manufacture of a medicament for the treatment of a disease or disorder in a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, and wherein the MCT composition provides a maximum serum concentration (Cmax) of b-hydroxybutyrate (BHB) after at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the presence of proteins, wherein the Cmax of BHB is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.

~~20.~~16. The MCT for use of claim ~~18~~14, or the use of claim ~~19~~15, wherein the MCT composition provides a maximum serum concentration (Cmax) of BHB after at least 3.0 hours after administration, after at least 3.5 hours after administration, after at least 4.0 hours after administration, or after at least 5 hours after administration.

~~21. The MCT for use of claim 18 or 20, or the use of claim 19 or claim 20, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of BHB is at least 200 µmol/L, at least 250 µmol/L, at least 300 µmol/L, or at least 350 µmol/L.~~

~~22.~~17. Medium chain triglycerides (MCT) for use in treating a subject in need thereof, wherein ~~a therapeutically effective amount~~ 20 g of MCT is to be administered in a pharmaceutical composition, wherein the MCT comprises at least 95% caprylic triglyceride, wherein the MCT composition provides a maximum serum concentration (Cmax) of acetoacetate (AcAc) after at least 2.5 hours after administration, when administered 30 minutes after a standard meal and in the presence of proteins, and wherein the Cmax of AcAc is at least 20 umol/L, at least 25 umol/L, at least 30 umol/L, at least 35 umol/L, or at least 40 umol/L.

~~23.~~18. The MCT for use of claim ~~22~~17, wherein the MCT composition provides a maximum serum concentration (Cmax) of AcAc after at least 3.0 hours after administration, after at least 3.5 hours after administration, after at least 4.0 hours after administration, or after at least 5 hours after administration.

~~24. The MCT for use of any one of claims 22 or 23, wherein the therapeutically effective amount of MCT is 20 g and wherein the Cmax of AcAc is at least 20 umol/L, at least 25 umol/L, at least 30 umol/L, at least 35 umol/L, or at least 40 umol/L.~~

~~25.~~19. The MCT for use of any one of claims ~~14, 16-18, and 20-24~~ ~~14~~11,~~ 17,~~ ~~18~~14, and ~~20~~16~~-23~~18, ~~and~~ or the use of any one of claims ~~15-17 and 19-21 15~~12, ~~16~~13, ~~19~~15, and ~~20~~16, wherein the MCT pharmaceutical composition is stable at a pH of about 5 to about 7.

~~26.~~20. Medium chain triglycerides ~~(MCTs)~~ MCT for use in treating a subject in need thereof, wherein a therapeutically effective amount of ~~(MCTs)~~ MCT is to be administered in two portions,

wherein the first portion comprises a first therapeutically effective amount of medium chain triglycerides ~~(MCTs)~~ MCT that is substantially released within 3 hours upon administration to the subject, and

wherein the second portion comprises a second therapeutically effective amount of medium chain triglycerides ~~(MCTs)~~ MCT and protein, wherein the second amount of ~~MCTs~~ MCT are substantially released from the second portion over 3 or more hours after administration of the second portion to the subject,

wherein the first portion of MCT is administered in the substantial absence of proteins, and

wherein the MCT comprise at least 95% caprylic triglyceride.

~~27. The MCT for use of claim 26, wherein the first portion of MCT is administered in the substantial absence of proteins.~~

~~28.~~21. The MCT for use of ~~any one of claims 26 or 27~~ claim ~~26~~20, wherein the first portion of MCT is substantially released within 2.5 hours, within 2 hours, within 1.5 hours, or within 1 hour upon administration to the subject.

~~29.~~22. The MCT for use of any one of claims ~~26 to 28~~ 26 20 or 21~~8~~, wherein the second portion of MCT is substantially released over 3.5 or more hours, 4 or more hours, 4.5 or more hours, or 5 or more hours upon administration to the subject.

~~30.~~23. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18 and 21-29~~ 1, 3, 4, 6, ~~9~~7, 9, 11, 13, 14, 17, 18, 19, 20, and 21 or the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21 and 25~~ 2, 5, 8, 10, 12, 15, and 19, wherein the disease or disorder is a disease or disorder associated with reduced cognitive function.

~~31.~~24. The MCT for use or the use of claim ~~30~~23, wherein the disease or disorder associated with reduced cognitive function is selected from Alzheimer's Disease and Age-Associated memory impairment.

~~32.~~25. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18 and 21-31~~ 1, 3, 4, 6, 7, 9, 11, 13, 14, 17, 18, 19, 20, and 21-24, or the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21, 25 and 30-31~~ 2, 5, 8, 10, 12, 15, 19, and 23-24, wherein the subject lacks the ApoE4 genotype.

~~33.~~26. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18 and 21-32,~~ 1, 3, 4, 6, 7, 9, 11, 13, 14, 17, 18, 19, 20, and 21-25, or the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21, 25 and 30-32~~ 2, 5, 8, 10, 12, 15, 19, and 23-25, wherein the amount of total ketones, BHB, and/or AcAc is determined using enzymatic methods.

~~34.~~27. A pharmaceutical composition comprising a first component and a second component,

wherein the first component comprises a therapeutically effective amount of a first portion of medium chain triglycerides ~~(MCTs)~~ MCT that is substantially released within 3 hours upon administration of the pharmaceutical composition to a subject in need thereof, and

wherein the second component comprises a therapeutically effective amount of a second portion of medium chain triglycerides ~~(MCTs)~~ MCT and protein, wherein the second portion of ~~MCTs~~ MCT are substantially released from the second component over 3 or more hours after administration of the pharmaceutical composition to the subject, and

wherein the MCT comprise at least 95% caprylic triglyceride.

~~35.~~28. The pharmaceutical composition of clam ~~34~~27, wherein the first portion of ~~MCTs~~ MCT is substantially released within 2.5 hours, within 2 hours, within 1.5 hours, or within 0.5 hours of administration of the pharmaceutical composition.

~~36.~~29. A pharmaceutical composition, comprising:

20 g medium chain triglycerides ~~MCTs~~ MCT and at least one pharmaceutically acceptable excipient,

wherein the MCT comprises at least 95% caprylic triglyceride,

wherein the composition is substantially free of proteins, and

wherein the composition provides a maximum serum concentration (Cmax) of at least one ketone body within at least 3 hours after administration, when administered 30 minutes after a standard meal and in the substantial absence of proteins to a subject in need thereof.

~~37.~~30. The composition of claim ~~36~~29, wherein the MCT composition provides a maximum serum concentration (Cmax) of at least one ketone body within at least 2.5 hours after administration, at least 2 hours after administration, at least 1.5 hours after administration, or at least 1 hour after administration.

~~38.~~31. The composition of claim ~~36~~ 29 or ~~37~~30, wherein the at least one ketone body is b-hydroxybutyrate (BHB), acetoacetate (AcAc), or combinations thereof.

~~39.~~32. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18 and 21-33~~ 1, 3, 4, 6, 7, 9, 11, 13, 14, 17, 18, 19, 20, and 21-26, the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21, 25 and 30-33~~ 2, 5, 8, 10, 12, 15, 19, and 23-26, or the composition of any one of claims 27-31, wherein the MCT pharmaceutical composition is an emulsion.

~~40.~~33. The MCT for use, the use of or the composition of claim ~~39~~32, wherein the emulsion does not phase separate for at least 10 minutes, at least 20 minutes, at least 30 minutes, at

least 45 minutes, at least 1 hour, at least 2 hours, at least 4 hours, at least 5 hours, or at least 24 hours.

~~41.~~34. The MCT for use, the use of or the composition of any one of claims ~~39~~ 32 or ~~40~~33, wherein the emulsion has a mean droplet diameter of between about 100 nm and about 1000 nm, about 100 nm and about 500 nm, or about 200 nm and about 300 nm.

~~42. The MCT for use of any one of claims 1, 3-5, 7-9, 11-14, 16-18, 21-33 and 39-41, the use of any one of claims 2-4, 6-8, 10-13, 15-17, 19-21, 25, 30-33 and 39-41, or the composition of any one of claims 34-41, wherein the MCT pharmaceutical composition comprises at least 95% tri:C8 MCT.~~

~~43. The MCT for use of any one of claims 1, 3-5, 7-9, 11-14, 16-18, 21-33 and 39-42, the use of any one of claims 2-4, 6-8, 10-13, 15-17, 19-21, 25, 30-33 and 39-42, or the composition of any one of claims 34-42, wherein the MCT pharmaceutical composition comprises at least 98% tri:C8 MCT.~~

~~44. The MCT for use of any one of claims 1, 3-5, 7-9, 11-14, 16-18, 21-33 and 39-43, the use of any one of claims 2-4, 6-8, 10-13, 15-17, 19-21, 25, 30-33 and 39-43, or the composition of any one of claims 34-43, wherein the MCT pharmaceutical composition comprises at least 95% caprylic triglyceride.~~

~~45.~~35. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18, 21-33 and 39-44~~ 1, 3, 4, 6, 7, 9, 11, 13, 14, 17, 18, 19, 20, 21-26, and 32-34, the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21, 25, 30-33 and 39-44~~ 2, 5, 8, 10, 12, 13, 15, 19, 23-26, and 32-34, or composition of any one of claims ~~34-44~~ 3427-41~~34~~, wherein the MCT pharmaceutical composition comprises at least 98% caprylic triglyceride.

~~46.~~36. The MCT for use of any one of claims ~~1, 3-5, 7-9, 11-14, 16-18, 21-33 and 39-45~~ 1, 3, 4, 6, 7, 9, 11, 13, 14, 17, 18, 19, 20, 21-26, 32-34, and 35, the use of any one of claims ~~2-4, 6-8, 10-13, 15-17, 19-21, 25, 30-33 and 39-45~~ 2, 5, 8, 10, 12, 13, 15, 19, 23-26, 32-34, and 35, ~~of~~ or composition of any one of claims ~~34-45~~ 27-34 and 35, wherein the subject in need thereof is a human.