CLAIMS

1. A method for preparing a food product, comprising:

(a) contacting a filamentous fungal biomass with a solution comprising a food additive;

(b) size-reducing the filamentous fungal biomass to form a plurality of filamentous fungal pieces; and

(c) removing at least a portion of a solvent of the solution to treat the plurality of filamentous fungal pieces to form the food product comprising the filamentous fungal pieces and the food additive,

wherein steps (a) and (b) are carried out simultaneously or sequentially in any order.

2. The method of claim 1, wherein the food additive comprises at least one of sodium chloride, a food seasoning, an edible protein, and a fibrous base material.

3. The method of claim 1, wherein step (a) is carried out under sub-atmospheric pressure or under super-atmospheric pressure.

4. The method of claim 1, wherein step (a) is carried out at a temperature below room temperature.

5. The method of claim 1, further comprising, prior to step (a), removing water from the filamentous fungal biomass.

6. The method of claim 1, wherein step (a) comprises agitating the filamentous fungal biomass together with the solution and the solution is selected from the group consisting of an aqueous solution and a non-aqueous solution.

7. The method of claim 1, wherein the filamentous fungal biomass absorbs an amount of the solution equal to at least about 5 wt%, at least about 10 wt%, at least about 15 wt%, at least about 20 wt%, at least about 25 wt%, or at least about 30 wt% of the weight of the filamentous fungal biomass.

8. The method of claim 1, wherein step (a) comprises contacting at least two filamentous fungal biomasses with the solution, wherein the method further comprises, between steps (a) and (b), aggregating the at least two filamentous fungal biomasses to form a filamentous fungal aggregate, and wherein step (b) comprises size-reducing the filamentous fungal aggregate.

9. The method of claim 1, further comprising, between steps (a) and (b), crust freezing the filamentous fungal biomass.

10. The method of claim 1, wherein step (b) comprises at least one of cutting, shredding, and shaving the filamentous fungal biomass.

11. The method of claim 1, wherein at least one of an average length, an average width, and an average depth of the plurality of filamentous fungal pieces is between about 0.5 mm and about 1.0 mm.

12. The method of claim 1, wherein step (c) comprises at least one of roasting the plurality of filamentous fungal pieces, baking the plurality of filamentous fungal pieces, boiling the plurality of filamentous fungal pieces, frying the plurality of filamentous fungal pieces, steaming the plurality of filamentous fungal pieces, cold-smoking the plurality of filamentous fungal pieces, and hot-smoking the plurality of filamentous fungal pieces.

13. The method of claim 1, further comprising, prior to step (a):

forming the filamentous fungal biomass by a fermentation method comprising culturing a filamentous fungus in or on a fermentation medium or on a membrane associated with a fermentation medium; and

inactivating the filamentous fungal biomass.

14. The method of claim 1, wherein the food product comprises one or more of the following:

a total protein content from about 10 wt% to about 25 wt%;

a dietary fiber content of at least about 1 gram;

a tensile strength of at least about 30 g/cm^2;

all essential amino acids;

at least one amino acid selected from the group consisting of alanine, cysteine, aspartic acid, glutamic acid, glycine, asparagine, proline, glutamine, arginine, serine, selenocysteine, and tyrosine;

at least about 10 wt% branched-chain amino acids;

a total fat content of less than about 30 wt%;

at least about 6 wt% dietary fiber on a dry weight basis; or

combinations thereof.

15. A meat analog food product made according to the method of claim 1.

16. A method for preparing a food product, comprising:

(a) contacting a filamentous fungal biomass with a solution comprising a food additive; and

(b) dehydrating the filamentous fungal biomass to form the food product comprising the filamentous fungal biomass and the food additive dispersed within the filamentous fungal biomass.

17. The method of claim 16, wherein the food product is a meat jerky analog food product.

18. The method of claim 16, wherein the solution comprises at least one of sodium chloride, a food seasoning, an edible protein, and a fibrous base material.

19. The method of claim 16, wherein a mass of the solution is between about 1% and about 30% of a mass of the filamentous fungal biomass prior to contacting the solution.

20. The method of claim 16, wherein step (a) is carried out under sub-atmospheric pressure.

21. The method of claim 16, further comprising, prior to step (a), removing water from the filamentous fungal biomass.

22. The method of claim 16, wherein step (a) is carried out by agitating the filamentous fungal biomass together with the solution and the solution is selected from the group consisting of an aqueous solution and a non-aqueous solution.

23. The method of claim 16, wherein the filamentous fungal biomass absorbs at least about 5 wt%, at least about 10 wt%, at least about 15 wt%, at least about 20 wt%, at least about 25 wt%, or at least about 30 wt% of the solution.

24. The method of claim 16, further comprising, prior to step (a):

forming the filamentous fungal biomass by a fermentation method comprising culturing a filamentous fungus in a fermentation medium; and

inactivating the filamentous fungal biomass.

25. The method of claim 16, wherein the food product comprises one or more of the following:

a total protein content from about 10 wt% to about 25 wt%;

a dietary fiber content of at least about 1 gram;

a tensile strength of at least about 30 g/cm^2;

all essential amino acids;

at least one amino acid selected from the group consisting of alanine, cysteine, aspartic acid, glutamic acid, glycine, asparagine, proline, glutamine, arginine, serine, selenocysteine, and tyrosine;

at least about 10 wt% branched-chain amino acids;

a total fat content of less than about 30 wt%;

at least about 6 wt% dietary fiber on a dry weight basis; or

combinations thereof.

26. A meat jerky analog food product made according to the method of claim 17.

27. A meat analog food product comprising filamentous fungus, wherein the meat analog food product has a shelf life of at least about two weeks and wherein at least one of the following is true:

(i) the meat analog food product comprises less than about 200 milligrams of sodium per 28 grams of food product;

(ii) the meat analog food product comprises no more than 15 grams of sugar per 28 grams of food product; and

(iii) a sugar content of the meat analog food product is no more than about 10 wt%.

28. The meat analog food product of claim 27, having a shelf life of at least about three weeks, at least about one month, at least about two months, at least about three months, at least about four months, at least about five months, at least about six months, at least about seven months, at least about eight months, at least about nine months, at least about ten months, at least about eleven months, at least about twelve months, at least about fifteen months, at least about eighteen months, at least about 21 months, or at least about 24 months.

29. The meat analog food product of claim 27, having a water activity of between about 0.35 and about 0.85.

30. The meat analog food product of claim 27, comprises one or more of the following:

a total protein content from about 10 wt% to about 25 wt%;

a dietary fiber content of at least about 1 gram;

a tensile strength of at least about 30 g/cm^2;

all essential amino acids;

at least one amino acid selected from the group consisting of alanine, cysteine, aspartic acid, glutamic acid, glycine, asparagine, proline, glutamine, arginine, serine, selenocysteine, and tyrosine;

at least about 10 wt% branched-chain amino acids;

a total fat content of less than about 30 wt%;

at least about 6 wt% dietary fiber on a dry weight basis; or

combinations thereof.

31. A method for preparing a food product, comprising:

(a) contacting a first filamentous fungal biomass with a first solution;

(b) size-reducing the first filamentous fungal biomass to form a plurality of filamentous fungal pieces;

(c) contacting a second filamentous fungal biomass with a second solution;

(d) combining the plurality of filamentous fungal pieces and the second filamentous fungal biomass; and

(e) treating the plurality of filamentous fungal pieces and the second filamentous fungal biomass to form the food product.

32. The method of claim 31, wherein the food product is a meat jerky analog food product.

33. The method of claim 31, wherein at least one of the first and second solutions comprises at least one of sodium chloride, a food seasoning, an edible protein, and a fibrous base material.

34. The method of claim 31, wherein at least one of the following is true: (i) a mass of the first solution is between about 1% and about 30% of a mass of the first filamentous fungal biomass prior to step (a); and (ii) a mass of the second solution is between about 1% and about 30% of a mass of the second filamentous fungal biomass prior to step (c).

35. The method of claim 31, wherein at least one of step (a) and step (c) is carried out under sub-atmospheric pressure.

36. The method of claim 31, wherein at least one of step (a) and step (c) is carried out at a temperature below room temperature.

37. The method of claim 31, wherein at least one of step (a) and step (c) is carried out at a temperature above room temperature.

38. The method of claim 31, further comprising at least one of: (i) prior to step (a), removing water from the first filamentous fungal biomass; and (ii) prior to step (c), removing water from the second filamentous fungal biomass.

39. The method of claim 31, wherein at least one of the following is true: (i) step (a) is carried out by agitating the first filamentous fungal biomass together with the first solution and the first solution is selected from the group consisting of an aqueous solution and a non-aqueous solution; and (ii) step (c) is carried out by agitating the second filamentous fungal biomass together with the second solution and the second solution is selected from the group consisting of an aqueous solution and a non-aqueous solution.

40. The method of claim 31, wherein at least one of the following is true: (i) the first filamentous fungal biomass absorbs at least about 5 wt%, at least about 10 wt%, at least about 15 wt%, at least about 20 wt%, at least about 25 wt%, or at least about 30 wt% of the first solution; and (ii) the second filamentous fungal biomass absorbs least about 5 wt%, at least about 10 wt%, at least about 15 wt%, at least about 20 wt%, at least about 25 wt%, or at least about 30 wt% of the second solution.

41. The method of claim 31, further comprising at least one of (i) between steps (a) and (b), crust freezing the first filamentous fungal biomass, and (ii) between steps (c) and (d), crust freezing the second filamentous fungal biomass.

42. The method of claim 31, further comprising, prior to at least one of steps (a) and (c):

forming at least one of the filamentous fungal biomass and the second filamentous fungal biomass by a fermentation method comprising culturing a filamentous fungus in a fermentation medium; and

inactivating the at least one of the first filamentous fungal biomass and the second filamentous fungal biomass.

43. The method of claim 31, wherein the food product comprises one or more of the following:

a total protein content from about 10 wt% to about 25 wt%;

a dietary fiber content of at least about 1 gram;

a tensile strength of at least about 30 g/cm^2;

all essential amino acids;

at least one amino acid selected from the group consisting of alanine, cysteine, aspartic acid, glutamic acid, glycine, asparagine, proline, glutamine, arginine, serine, selenocysteine, and tyrosine;

at least about 10 wt% branched-chain amino acids;

a total fat content of less than about 30 wt%;

at least about 6 wt% dietary fiber on a dry weight basis; or

combinations thereof.

44. The method of claim 31, wherein at least one of the first filamentous fungal biomass and the second filamentous fungal biomass comprises a filamentous fungal biomat or a portion thereof.

45. A meat jerky analog food product made according to the method of claim 32.

46. An intermediate food composition, comprising:

a filamentous fungal biomass; and

a solution comprising a food additive, absorbed by the filamentous fungal biomass.

47. The intermediate food composition of claim 46, wherein the solution comprises at least one of sodium chloride, a food seasoning, an edible protein, and a fibrous base material.

48. The intermediate food composition of claim 46, wherein a mass of the solution is between about 1% and about 30% of a mass of the filamentous fungal biomass.

49. The intermediate food composition of claim 46, wherein the filamentous fungal biomass is inactivated.

50. A method for preparing a food product, comprising:

(a) vacuum-shaping a filamentous fungal biomass, wherein the filamentous fungal biomass comprises a solution comprising a food additive;

(b) size-reducing the vacuum-shaped filamentous fungal biomass to form a plurality of filamentous fungal pieces; and

(c) removing at least a portion of a solvent of the solution to treat the plurality of filamentous fungal pieces to form the food product comprising the filamentous fungal pieces and the food additive.

51. The method of claim 50, wherein, following step (a), the filamentous fungal biomass has an approximately cylindrical shape.

52. The method of claim 50, further comprising, between steps (a) and (b), crust freezing the filamentous fungal biomass.

53. The method of claim 50, wherein step (b) comprises at least one of cutting, shredding, and shaving the filamentous fungal biomass.

54. The method of claim 50, wherein at least one of an average length, an average width, and an average depth of the plurality of filamentous fungal pieces is between about 0.5 mm and about 1.0 mm.

55. The method of claim 50, further comprising, prior to step (a):

forming the filamentous fungal biomass by a fermentation method comprising culturing a filamentous fungus in a fermentation medium; and

inactivating the filamentous fungal biomass.

56. The method of claim 50, wherein the food product comprises one or more of the following:

a total protein content from about 10 wt% to about 25 wt%;

a dietary fiber content of at least about 1 gram;

a tensile strength of at least about 30 g/cm^2;

all essential amino acids;

at least one amino acid selected from the group consisting of alanine, cysteine, aspartic acid, glutamic acid, glycine, asparagine, proline, glutamine, arginine, serine, selenocysteine, and tyrosine;

at least about 10 wt% branched-chain amino acids;

a total fat content of less than about 30 wt%;

at least about 6 wt% dietary fiber on a dry weight basis; or

combinations thereof.

57. The method of claim 50, wherein the filamentous fungal biomass comprises a filamentous fungal biomat or a portion thereof.