CLAIMS

1. A malleable mass of dough comprising:

   a. dry material; said dry material comprises flour; and,

   b. a liquid component; wherein said liquid component comprising liquid essentially originating from fresh whole Wolffia genus plant added to said dry material during the kneading process; said liquid component extractable from said fresh whole plant during the plant disruptive dough kneading process; post kneaded ratio of said whole fresh plant to disrupted plant is at least 50 % lower than a corresponding dough comprising same ratio of dry material to liquid component defined as water, said corresponding dough is further characterized by: (i) Wolffia added post kneading, or (ii) Wolffia added after characteristics of dough have been substantially attained, or (iii) Wolffia added in addition to the liquid component of said dough, or any combination thereof.

2. The dough of Claim 1, wherein no more than 20% of the total amount of said liquid component, is externally added water.

3. The dough of any one of Claims 1 to 2, wherein at least 80% of said liquid component comprises liquid originating from said fresh whole Wolffia.

4. The dough of any one of Claims 1 to 3, wherein about 100% of said liquid component comprises liquid originating from said fresh whole Wolffia.

5. The dough of any one of Claims 1 to 4, wherein said Wollfia plant is selected from the group consisting of Wolffia angusta, Wolffia arrhiza, Wolffia australiana, Wolffia borealis, Wolffia brasiliensis, Wolffia columbiana, Wolffia cylindracea, Wolffia elongata, Wolffia globosa, Wolffia microscopica, and Wolffia neglecta.

6. The dough of any one of Claims 1 to 5, wherein said flour is selected from the group consisting of wheat flour, whole flour, buckwheat flour (gluten free), durum wheat, rice flour, rye flour, oat flour, corn flour, teff flour, and combinations thereof.

7. The dough of any one of Claims 1 to 6, wherein said whole fresh plant is selected from the group consisting of whole plant, essentially intact plant, whole cells and any combination thereof.

8. The dough of any one of Claims 1 to 7, wherein said disrupted plant is selected from the group consisting of pieces of the plant, plant part, cell debris, fractionated plant cells, shriveled fronds, a powder of the whole plant, juice plant, partially dried plant, essentially fully dried plant, processed plant and any combination thereof.

9. The dough of Claim 8, wherein said juice plant comprises suspension from said fresh plant cells with a solid content of between about 1% and about 15%.

10. The dough of any one of Claims 1 to 9, wherein said dough has chracteristic rehological properties relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

11. The dough of any one of Claims 1 to 10, wherein said dough has higher rigidity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

12. The dough of any one of Claims 1 to 11, wherein said dough has higher stability to mechanical solicitations relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

13. The dough of any one of Claims 1 to 12, wherein said dough has higher τcritic value relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

14. The dough of any one of Claims 1 to 13, wherein said dough has a lower deformation capacity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

15. The dough of any one of Claims 1 to 14, wherein said dough has higher plasticity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

16. The dough of any one of Claims 1 to 15, wherein said dough has higher consistancy relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

17. The dough of any one of Claims 1 to 16, having essentially homogenous coloring.

18. The dough of any one of Claims 1 to 17, wherein the color of said mass of dough is optically significantly different from the color of a corresponding dough prepared with the same type and same amount of flour a similar liquid to total dry material ratio, said corresponding dough is further characterized by at least one property selected from the group consisting of: (a) being absent of said Wolffia plant, (b) Wolffia added post kneading, (c) Wolffia added after characteristics of dough have been substantially attained, (d) Wolffia added in addition to the liquid component of said dough, and any combination thereof.

19. The dough of any one of Claims 1 to 18, wherein said dough has a color falling within or being near said plant color range; said plant color is selected from the group consisting of green pigment range, red pigment range and yellow pigment range.

20. The dough of any one of Claims 1 to 19, wherein said plant has a plant color of green or near green.

21. The dough of any one of Claims 1 to 20, wherein said dough comprises dry plant material, said dough having a ratio (w/w) of said flour to said dry plant material of between about 98:2 to 42:58.

22. The dough of Claim 21, wherein said flour to dry plant material ratio is between 97:3 to 55:45.

23. The dough of Claim 21, wherein said flour to dry plant material ratio is between 95:5 to 65:35.

24. The dough of any one of Claims 1 to 23, wherein said dough comprises a liquid component and total dry material, said total dry material comprises flour and plant material when measured in dry form.

25. The dough of Claim 24, wherein said dough comprises a weight % ratio of liquid to total dry material of between 55% to 85%.

26. The dough of Claim 24, wherein said ratio of liquid to total dry material is between 60% to 80%.

27. The dough of Claim 24, wherein said ratio of liquid to total dry material is between 65% to 75%.

28. The dough of any one of Claims 1 to 27, wherein said plant material has an average diameter of up to 12 mm.

29. The dough of Claim 28, wherein said plant material has an average diameter of between 0.02 mm and 12 mm.

30. The dough of Claim 28, wherein said plant material has an average diameter of between 0.03 mm and 2 mm.

31. The dough of Claim 28, wherein said plant material has an average diameter of between 0.5 mm and 1 mm.

32. The dough of Claim 28, wherein said plant material has an average diameter of 0.6 mm to 1mm.

33. The dough of Claim 28, wherein said plant material has an average diameter of less than 1 mm.

34. The dough of any one of Claims 1 to 33, wherein the dough mass comprises components of the liquid of the plant.

35. The dough of Claim 34, wherein said components are selected from the group consisting of: proteins, protein complexes, saccharides oligosaccharides, fats, vitamins, vitamin A, vitamin B1, vitamin B3 and any combination thereof.

36. The dough of any one of Claims 1 to 35, wherein said dough mass comprises plant proteins absorbed by or associated with said flour.

37. The dough of any one of Claims 1 to 36, wherein said dough has a characteristic farinographic profile with an intermediate peak before reaching its development time.

38. The dough of any one of Claims 1 to 37, characterized by at least one property selected from the group consisting of: a higher development time (DT), a lower stability time (S), a higher degree of softening (DS), a higher consistency (C) value and any combination thereof, as compared to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

39. The dough of any one of Claims 1 to 38, being characterized by at least one farinographic parameter selected from the group consisting of development time (DT) of about 5 minutes, stability time (S) of about 2 minutes, degree of softening (DS) of about 80 to 115 FU and any combination thereof.

40. The dough of of any one of Claims 1 to 39, characterized by a farinograph profile having an intermediate peak time prior to reaching its development time.

41. The dough of any one of Claims 1 to 40, characterized by rising at a predetermined time point to a level that is from about 8% to about 400% greater than the rise at said predetermined time point of a corresponding dough being absent of said plant material.

42. The dough of Claim 41 wherein said rising at said predetermined time point is to a level that is between 10% and 50% greater than the rising of a corresponding dough being absent of said plant material.

43. The dough of any one of Claims 1 to 42 , being in a cooled or frozen state.

44. The dough of any one of Claims 1 to 43, wherein said dough has a consistency similar to a dough in which its liquid fraction comprises water.

45. The dough of any one of Claims 1 to 44, wherein said dough has a consistency of +/- 15% of a dough in which its liquid fraction comprises water.

46. The dough of any one of Claims 1 to 45, wherein said dough has a consistency in the range of about 600 to about 630 FU.

47. The dough of any one of Claims 1 to 46, wherein said dough additionally comprises salt.

48. The dough of any one of Claims 1 to 47, wherein said dough is combined with at least one additional food ingredient.

49. The dough of Claim 48, wherein said at least one additional food ingredient is selected from the group consisting of flavoring agent, vegetable or vegetable part, oil, vitamins, olives and grains.

50. The dough of of any one of Claims 1 to 49, wherein said dough further comprises a leavening agent.

51. The dough of Claim 50, wherein said leavening agent is selected from the group consisting of: unpasteurized beer, buttermilk, ginger beer, kefir, sourdough starter, yeast, whey protein concentrate, yogurt, biological leaveners, chemical leaveners, baking soda, baking powder, baker's ammonia, potassium bicarbonate and any combination thereof.

52. The dough of any one of Claims 1 to 51, wherein said plant contributes to the rising of said dough as compared to dough prepared without the plant material.

53. The dough of of any one of Claims 1 to 52, wherein said dough is used to prepare a yeast and non-yeast food product.

54. The dough of Claim 53, wherein said food product is in a form selected from the group consisting of partially or fully cooked, baked, stewed, boiled, broiled, fried and any combination of same.

55. The dough of any one of Claims 1 to 54, wherein said dough is used to make pasta.

56. The dough of claim 55, wherein said dough is used to make wet pasta.

57. The dough of claim 55, wherein said dough has a lower τcritic value relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

58. A food product comprising the dough of any one of Claims 1 to 57.

59. The food product of Claim 58, wherein said dough is combined with at least one additional food ingredient.

60. The food product of any of Claims 58 to 59, being partially or fully cooked, baked, stewed, boiled, broiled, fried and combination of same.

61. The food product of any one of Claims 58 to 60, selected from the group consisting of bakery, pasta, noodles, cereal and dough chips.

62. The food product of any one of Claims 58 to 61, comprising an overall green or near green pigment texture, and comprising distributed therein Wolffia genus plant.

63. A method of preparing a malleable mass of dough comprising steps of:

a. obtaining dry material; said dry material comprises flour; and,

b. obtaining a liquid component; said liquid component comprising liquid essentially originating from fresh whole Wolffia genus plant;

wherein said method additionally comprising steps of kneading said dry material with said fresh whole Wolffia genus plant to disrupt at least part of said fresh whole plant thereby extracting said liquid component from said fresh whole plant, such that the post kneaded ratio of said whole fresh plant to disrupted plant is at least 50% lower than a corresponding dough comprising same ratio of dry material to liquid component defined as water, said corresponding dough is further characterized by: (i) Wolffia added post kneading, or (ii) Wolffia added after characteristics of dough have been substantially attained, or (iii) Wolffia added in addition to the liquid component of said dough, or any combination thereof.

64. The method of Claim 63, additionally comprising a step of kneading said dry material with said fresh whole Wolffia genus plant under conditions sufficient to cause disruption of at least part of said fresh whole plant thereby sufficient amount of liquid is extracted from said whole plant to form the dough.

65. The method of Claim 64, additionally comprising a step of selecting said conditions from the group consisting of kneading time, kneader torque moment, kneading velocity, dough temperature, tip speed and any combination thereof.

66. The method of any one of Claims 63 to 65, additionally comprising a step of kneading at least flour and fresh plant for a time interval between the dough reaches its arrival time and the dough's departure time as determined by a farinograph profile of said dough.

67. The method of any one of Claims 63 to 66, additionally comprising a step of kneading said flour and fresh plant with at least one additional food ingredient.

68. The method of Claim 67, additionally comprising a step of selecting said at least one additional food ingredient from the group consisting of leavening agent, flavoring agent, vegetable or vegetable part, oil, vitamins, salt, grains and any combination thereof.

69. The method of any one of Claims 63 to 68, comprising cooling or freezing said dough.

70. The method of any one of Claims 63 to 69, wherein at least 80% of said liquid component comprises liquid originating from said fresh whole Wolffia.

71. The method of any one of Claims 63 to 70, wherein about 100% of said liquid component comprises liquid originating from said fresh whole Wolffia.

72. A method of preparing a food product comprising steps of providing a dough as claimed in any one of claims 1 to 57 and processing said dough, said processing is selected from the group consisting of combining the dough with a food ingredient, rising, kneading, extruding, molding, shaping, cooking, stewing, boiling, broiling, baking, frying and any combination of same.

CLAIMS

1. A malleable mass of dough comprising:

    a. dry material; said dry material comprises flour; and,

    b. a liquid component; wherein said liquid component comprising liquid essentially originating from fresh whole Wolffia genus plant added to said dry material during the kneading process; said liquid component extractable from said fresh whole plant during the plant disruptive dough kneading process; post kneaded ratio of said whole fresh plant to disrupted plant is at least 50 % lower than a corresponding dough comprising same ratio of dry material to liquid component defined as water, said corresponding dough is further characterized by: (i) Wolffia added post kneading, or (ii) Wolffia added after characteristics of dough have been substantially attained, or (iii) Wolffia added in addition to the liquid component of said dough, or any combination thereof.

2. The dough of Claim 1, wherein at least one of the following holds true:

    a. no more than 20% of the total amount of said liquid component, is externally added water;

    b. at least 80% of said liquid component comprises liquid originating from said fresh whole Wolffia;

    c. about 100% of said liquid component comprises liquid originating from said fresh whole Wolffia.

3. The dough of Claim 1, wherein said Wollfia plant is selected from the group consisting of Wolffia angusta, Wolffia arrhiza, Wolffia australiana, Wolffia borealis, Wolffia brasiliensis, Wolffia columbiana, Wolffia cylindracea, Wolffia elongata, Wolffia globosa, Wolffia microscopica, and Wolffia neglecta.

4. The dough of Claim 1, wherein said flour is selected from the group consisting of wheat flour, whole flour, buckwheat flour (gluten free), durum wheat, rice flour, rye flour, oat flour, corn flour, teff flour, and combinations thereof.

5. The dough of Claim 1, wherein said whole fresh plant is selected from the group consisting of whole plant, essentially intact plant, whole cells and any combination thereof.

6. The dough of Claim 1, wherein said disrupted plant is selected from the group consisting of pieces of the plant, plant part, cell debris, fractionated plant cells, shriveled fronds, a powder of the whole plant, juice plant, partially dried plant, essentially fully dried plant, processed plant and any combination thereof.

7. The dough of Claim 6, wherein said juice plant comprises suspension from said fresh plant cells with a solid content of between about 1% and about 15%.

8. The dough of Claim 1, wherein said dough has chracteristic rehological properties relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

9. The dough of Claims 1, wherein said dough has at least one characteristic selected from the group consisting of:

    a. higher rigidity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

    b. higher stability to mechanical solicitations relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

    c. higher τ_{critic} value relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

d. a lower deformation capacity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

e. has higher plasticity relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

f. higher consistancy relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant;

g. having essentially homogenous coloring;

h. the color of said mass of dough is optically significantly different from the color of a corresponding dough prepared with the same type and same amount of flour a similar liquid to total dry material ratio, said corresponding dough is further characterized by at least one property selected from the group consisting of: (a) being absent of said Wolffia plant, (b) Wolffia added post kneading, (c) Wolffia added after characteristics of dough have been substantially attained, (d) Wolffia added in addition to the liquid component of said dough, and any combination thereof;

i. a color falling within or being near said plant color range; said plant color is selected from the group consisting of green pigment range, red pigment range and yellow pigment range.

10. The dough of Claim 1, wherein said dough comprises at least one of the following:

a. dry plant material, said dough having a ratio (w/w) of said flour to said dry plant material selected from the group consisting of:

i. between about 98:2 to 42:58;

ii. between 97:3 to 55:45;

iii. between 95:5 to 65:35.

b. a liquid component and total dry material, said total dry material comprises flour and plant material when measured in dry form.

c. a weight % ratio of liquid to total dry material selected from the group consisting of:

   i. between 55% to 85%;

   ii. between 60% to 80%;

   iii. between 65% to 75%.

d. plant material having an average diameter selected from the group consisitng of:

   i. up to 12 mm;

   ii. between 0.02 mm and 12 mm;

   iii. between 0.03 mm and 2 mm;

   iv. between 0.5 mm and 1 mm;

   v. 0.6 mm to 1mm;

   vi. less than 1 mm;

e. components of the liquid of the plant, said components are selected from the group consisting of: proteins, protein complexes, saccharides oligosaccharides, fats, vitamins, vitamin A, vitamin B1, vitamin B3 and any combination thereof;

f. plant proteins absorbed by or associated with said flour.

11. The dough of Claim 1, wherein at least one of the following holds true:

a. said dough has a characteristic farinographic profile with an intermediate peak before reaching its development time;

b. said dough is characterized by at least one property selected from the group consisting of: a higher development time (DT), a lower stability time (S), a higher degree of softening (DS), a higher consistency (C) value and any combination thereof, as compared to a corresponding dough having similar

liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

c. said dough is characterized by at least one farinographic parameter selected from the group consisting of development time (DT) of about 5 minutes, stability time (S) of about 2 minutes, degree of softening (DS) of about 80 to 115 FU and any combination thereof.

d. said dough is characterized by rising at a predetermined time point to a level selected from the group consisitng of:

    i. that is from about 8% to about 400% greater than the rise at said predetermined time point of a corresponding dough being absent of said plant material;

    ii. that is between 10% and 50% greater than the rising of a corresponding dough being absent of said plant material.

e. said dough is being in a cooled or frozen state.

12. The dough of Claim 1, wherein said dough has a consistency selected from the group consisiting of:

a. similar to a dough in which its liquid fraction comprises water;

b. +/- 15% of a dough in which its liquid fraction comprises water;

c. in the range of about 600 to about 630 FU.

13. The dough of Claim 1, wherein at least one of the following holds true:

a. said dough additionally comprises salt;

b. said dough is combined with at least one additional food ingredient, said at least one additional food ingredient is selected from the group consisting of flavoring agent, vegetable or vegetable part, oil, vitamins, olives and grains.

c. said dough further comprises a leavening agent, said leavening agent is selected from the group consisting of: unpasteurized beer, buttermilk, ginger beer, kefir, sourdough starter, yeast, whey protein concentrate, yogurt,

biological leaveners, chemical leaveners, baking soda, baking powder, baker's ammonia, potassium bicarbonate and any combination thereof;

d. said plant contributes to the rising of said dough as compared to dough prepared without the plant material.

e. said dough has a lower τ_{critic} value relative to a corresponding dough having similar liquid to total dry material ratio, said corresponding dough being absent of said Wolffia plant.

14. The dough of Claim 1, wherein at least one of the following holds true:

a. said dough is used to prepare a yeast and non-yeast food product, said food product is in a form selected from the group consisting of partially or fully cooked, baked, stewed, boiled, broiled, fried and any combination of same.

b. said dough is used to make pasta.

c. said dough is used to make wet pasta.

15. A food product comprising the dough of Claim 1.

16. The food product of Claim 15, wherein at least one of the following holds true:

a. said dough is combined with at least one additional food ingredient.

b. said food product being partially or fully cooked, baked, stewed, boiled, broiled, fried and combination of same.

c. said food product is selected from the group consisting of bakery, pasta, noodles, cereal and dough chips.

d. said food product comprising an overall green or near green pigment texture, and comprising distributed therein Wolffia genus plant.

17. A method of preparing a malleable mass of dough comprising steps of:

a. obtaining dry material; said dry material comprises flour; and,

b. obtaining a liquid component; said liquid component comprising liquid essentially originating from fresh whole Wolffia genus plant;

wherein said method additionally comprising steps of kneading said dry material with said fresh whole Wolffia genus plant to disrupt at least part of said fresh whole plant thereby extracting said liquid component from said fresh whole plant, such that the post kneaded ratio of said whole fresh plant to disrupted plant is at least 50% lower than a corresponding dough comprising same ratio of dry material to liquid component defined as water, said corresponding dough is further characterized by: (i) Wolffia added post kneading, or (ii) Wolffia added after characteristics of dough have been substantially attained, or (iii) Wolffia added in addition to the liquid component of said dough, or any combination thereof.

18. The method of Claim 17, additionally comprising at least one step selected from the group consisiting of:

    a. kneading said dry material with said fresh whole Wolffia genus plant under conditions sufficient to cause disruption of at least part of said fresh whole plant thereby sufficient amount of liquid is extracted from said whole plant to form the dough.

    b. selecting said conditions from the group consisting of kneading time, kneader torque moment, kneading velocity, dough temperature, tip speed and any combination thereof.

    c. kneading at least flour and fresh plant for a time interval between the dough reaches its arrival time and the dough's departure time as determined by a farinograph profile of said dough.

    d. kneading said flour and fresh plant with at least one additional food ingredient.

    e. selecting said at least one additional food ingredient from the group consisting of leavening agent, flavoring agent, vegetable or vegetable part, oil, vitamins, salt, grains and any combination thereof.

    f. cooling or freezing said dough.

19. The method of Claim 17, wherein at least one of the following holds true:

a. at least 80% of said liquid component comprises liquid originating from said fresh whole Wolffia.

b. about 100% of said liquid component comprises liquid originating from said fresh whole Wolffia.

20. A method of preparing food product comprising steps of providing a dough as claimed in claim 1 and processing said dough, said processing is selected from the group consisting of combining the dough with a food ingredient, rising, kneading, extruding, molding, shaping, cooking, stewing, boiling, broiling, baking, frying and any combination of same.