What is claimed is:

1. The use of an ultrarapid acting insulin preparation in the manufacture of a medicament for treating a patient with diabetes type 2, wherein the patient is selected from a patient with diabetes type 2 currently being treated with a suppressor of hepatic glucose output and an insulin secretagogue;
the patient is to be discontinued from the treatment with the insulin secretagogue; and wherein the medicament is to be routinely administered with at least one established meal.

2. The use of claim 1 wherein treatment with the suppressor of hepatic glucose output is also discontinued.

3. The use of an ultrarapid-acting insulin preparation in the manufacture of a medicament for treating a patient with diabetes type 2 wherein the patient is currently being treated with a suppressor of hepatic glucose output who is in need of improved glycemic control and who would be a candidate for combination treatment with said suppressor of hepatic glucose output and an insulin secretagogue; wherein the patient is to be continued on treatment with a suppressor of hepatic glucose output, the patient is not to be treated with an insulin secretagogue, and wherein the medicament is to be routinely administered with at least one established meal.

4. The use of claim 2 wherein the patient is further selected for having an insulin resistance at the lower portion of the insulin resistance spectrum.

5. The use of an ultrarapid insulin preparation in the manufacture of a medicament for treating a patient with diabetes type 2, wherein the patient with diabetes type 2 is currently being treated with an insulin sensitizer and an insulin secretagogue; and wherein treatment with the insulin secretagogue is to be discontinued and the medicament is to be routinely administered with each meal.

6. The use of claim 1, 3 or 5 wherein the patient is further selected for needing to reduce or avoid weight gain.

7. The use of claim 1, 3 or 5 wherein the medicament is not to be administered via injection.

8. The use of claim 3, 5 or 7 wherein patient is further a candidate for treatment with insulin and is further selected on the basis of being needle-phobic or desiring to avoid frequent injections.

9. The use of claim 1 or 3 wherein the suppressor of hepatic glucose output is metformin.

10. The use of claim 1, 3 or 5 wherein the insulin secretagogue is a sulfonylurea.

11. The use of claim 1 or 3 wherein the patient is further selected for having well or moderately controlled fasting blood glucose.

12. The use of claim 1, 3 or 5 wherein the medicament is to be administered by inhalation.

13. The use of claim 3, 5 or 12 wherein the medicament is a dry powder.

14. The use of claim 3, 5 or 13 wherein the medicament comprises a fumaryl diketopiperazine (FDKP) associated with insulin.

15. The use of claim 3, 5, or 13 wherein the medicament comprises insulin-FDKP.

16. The use of claim1, 3 or 5 wherein the patient is further selected for having an HbA1c level =8.

17. The use of claim1, 3 or 5 wherein the patient is further selected for having an elevated mean amplitude of glucose excursions.

18. The use of claim1, 3, or 5 wherein said medicament is to be administered with each meal containing more than 15 g of carbohydrate.

19. The use of claim1, 3 or 5 wherein said medicament is to be administered at a dosage sufficient to maximally reduce hepatic glucose output within 60 minutes of administration.

20. The use of claim 1, 3, or 5 wherein said medicament is to be administered at a dosage within the range of 1 to 32 subcutaneous equivalent units.

21. The use of claim 5 wherein treatment with the insulin sensitizer is also discontinued.

22. The use of claim 21 wherein the patient is further selected for having an insulin resistance at the higher portion of the insulin resistance spectrum.

23. The use of claim 5 wherein the insulin sensitizer is a thiazolidinedione (TZD).

24. The use of claim 23 wherein the TZD is pioglitazone.

25. The use of an ultrarapid-acting insulin in the manufacture of a medicament for the improved treatment of hyperglycemia, wherein the ultrarapid-acting insulin is to be administered prandially, and in combination with a long-acting insulin analog administered once daily within 6 hours of waking for the day.

26. The use of claim 25 wherein the long acting insulin analog is to be administered within 3 hours of waking.

27. The use of claim 25 wherein the long acting insulin analog is insulin detemir or insulin glargine.

28. The use of claim 27 wherein the long acting insulin is insulin glargine wherein a second dose of insulin glargine is to be administered from 8 to 14 hours after said morning dose.

29. The use of claim 25, wherein the ultrarapid acting insulin comprises a formulation comprising insulin and a diketopiperazine.

30. The use of claim 25 wherein the ultrarapid acting insulin comprises insulin-FDKP.

31. The use of claim 25 wherein the ultrarapid acting insulin is to be administered by inhalation into the lungs.

32. The use of claim 25 wherein the hyperglycemia is resultant of diabetes type 2.

33. The use of an ultrarapid-acting insulin in the manufacture of a medicament for the improved treatment of hypoglycemia, wherein the ultrarapid-acting insulin is to be administered prandially and in combination with a continuous infusion of a short-acting insulin with an insulin pump.

34. The use of claim 33 wherein the short-acting insulin is regular human insulin or a rapid acting insulin analog.

35. The use of an ultrarapid-acting insulin in the manufacture of a medicament for the control of glycemia related to one or more daily meals in an individual with diabetes without adjusting an insulin dose for meal content, wherein a standard dosage of the medicament is to be administered at a mealtime for one or more of the daily meals, wherein, for any given daily meal, the standard dosage for the daily meal has been predetermined based on said individual's usual meal content for the daily meal, and the standard dosage is not adjusted based on daily variation in the meal content of the daily meal

36. The use of claim 35 wherein meal content is =25% to =200% of a usual meal content as used in determination of the predetermined dose.

37. The use of claim 35 wherein the ultrarapid-acting insulin formulation is insulin-FDKP.

38. Use of an ultrarapid-acting insulin formulation in the manufacture of a medicament for controlling glycemia related to a daily meal for a patient with delayed or prolonged nutrient absorption,wherein a standard dosage of the medicament is to be administered for one or more of the daily meals, wherein, for any given daily meal, the standard dosage for the daily meal has been predetermined based on said individual's usual meal content for the daily meal, and the standard dosage is not adjusted based on daily variation in the meal content of the daily meal, and wherein 50% to 75% of the standard dosage is to be administered at mealtime for the daily meal; and wherein the remainder of the standarddosage is to be administered 30 to 120 minutes after beginning the daily meal.

39. The use of claim 38 wherein the ultrarapid acting insulin formulation is insulin-FDKP.

40. The use of claim 38 wherein the delayed nutrient absorption is related to a disease state.

41. The use of claim 38 wherein the delayed nutrient absorption is related to a meal content high in fat or fiber.

42. The use of claim 38 wherein the prolonged nutrient absorption is related to a prolonged meal.

43. The use of an ultrarapid-acting insulin in the manufacture of a medicament for the control of glycemia related to a daily meal wherein the insulin dosage is adjusted to the glycemic load of the meal consumed; wherein an initial standard dose of the medicament is to be administered at mealtime for the daily meal; wherein, for any given daily meal, the standard dosage for the daily meal has been predetermined based on said individual's usual meal content for the daily meal, and wherein postprandial blood glucose is to be determined 1 to 2 hours after beginning the daily meal; and if the postprandial blood glucose is >140 mg/dl, a second dose of the ultra rapid acting insulin formulation is to be administered, wherein the second dose is 25% to 100% of the initial dose.

44 The use of claim 43 wherein the medicament is insulin-FDKP.

45. The use of insulin-FDKP in the manufacture of a medicament for treating a diabetic patient with subcutaneous insulin resistance , wherein the patient with subcutaneous insulin resistance is selected on the basis of atypically high insulin dosage;

the treatment with subcutaneously administered rapid-, short-, or intermediate-acting insulin formulations is to be discontinued; and

the treatment by administration of prandial doses of insulin-FDKP by inhalation effective for the control of postprandial hypoglycemia is to be initiated.

46. The use of claim 45 wherein the atypically high insulin dosage is =2 units/Kg/day.

47. The use of claim 45 wherein the selecting step further comprises selection of the basis that the patient has normal or near-normal levels of endogenous basal insulin.

48. The use of claim 47 wherein the level of endogenous basal insulin is <50 μU/ml.

49. The use of claim 45 wherein the selecting step further comprises selection on the basis of injection site lipoatrophy or lipodystrophy.

50. The use of claim 45 wherein the selecting step further comprises selection of the basis of the patient having 2 HbAlc level determinations =9% in a 6 to 9 month period while on an intensified insulin regimen.

51. The useof claim 45 wherein the selecting step further comprises selection of the basis of the patient having life threatening glycemic instability characterized by periods of hyperglycemia and/or hypoglycemia despite adherence to their insulin regimen and any diet or exercise regimen.

52. The use of claim 45 further comprising the step of confirming the patient has subcutaneous insulin resistance by determining that a similar or improved degree of glycemic control is achieved with a substantially lower dosage of insulin after adjustment based on relative bioavailability.

53. A method for determining an individual's dosage of an ultrarapid acting insulin for a daily meal comprising the steps of:

administering a low dose of the ultrarapid acting insulin at mealtime for the daily meal for which the dosage is being titrated each day for at least 3 days within a titration period of not more than a week;

iteratively increasing the dosage by the amount of the low dose in each subsequent titration period and administering at mealtime for the daily meal for which the dosage is being titrated each of at least three days in the titration period until a titration endpoint is reached.

54. The method of claim 53 wherein the low dose is 1-5 subQ eq units.

55. The method of claim 53 wherein the ultrarapid acting insulin comprises insulin-FDKP.

56. The method of claim 53 wherein the titration endpoint is selected from:

1) achieving a 2-hour post-prandial median glucose is between 70 and 110 mg/dl,

2) the dosage based on subcutaneous equivalent (subQ eq) units is a maximal dosage,

3) an episode of severe hypoglycemia with a confirmed SMBG <36 mg/dl occurs and the dosage is decreased by the equivalent of one low-dose cartridge, and

4) an episode of mild to moderate hypoglycemia with a confirmed SMBG of <70 mg/dl occurs, the dosage is decreased by the equivalent of one low dose cartridge for one week and then the titration is resumed until it reaches any of said endpoints 1-3 or the dosage is set at the level below that which again produces the mild to moderate hypoglycemia.

57. The method of claim 56 wherein the dosage for 2 or more daily meals are titrated concurrently.

58. The method of claim 56 wherein the dosage for 2 or more daily meals are titrated successively from the daily meal resulting in the highest 2-hour postprandial blood glucose to the daily meal resulting in the lowest 2-hour postprandial blood glucose.

59. The method of claim 56 wherein said maximal dosage is 24 subQ eq units.

60. The method of claim 56 wherein said maximal dosage is 32 subQ eq units.

61. The use of an ultrarapid-acting insulin in the manufacture of a medicament for the improved treatment of hyperglycemia, wherein the ultrarapid-acting insulin is to be administered prandially, and in combination with a long-acting insulin analog administered twice daily wherein a first dose of long-acting insulin is to be administered within 6 hours of waking for a day and a second dose of long-acting insulin is to be administered from 8 to 14 hours after said first dose, and wherein said long-acting insulin analog is insulin glargine.

62. The use of claim 61 wherein the administration of said first dose of long-acting insulin is within 3 hours of waking.

63. The use of claim 61 wherein the ultrarapid-acting insulin comprises a formulation comprising insulin and a diketopiperazine.

64. The use of claim 61 wherein the ultrarapid-acting insulin comprises insulin-FDKP.

65. The use of claim 61 wherein the ultrarapid-acting insulin is to be administered by inhalation into the lungs.

66. The use of claim 61 wherein the hyperglycemia is resultant of diabetes type 2.

67. The use of claim 35 wherein a standard dosage is to be administered at each mealtime.

68. The use of claim 35 wherein a single predetermined dosage is used for each mealtime.

69. The use of claim 35 wherein a predetermined dosage is set for each mealtime.

70. The use of claim 35 wherein meal content is assessed as glycemic load.

71. The use of claim 35 wherein meal content is assessed as caloric content.

72. The use of claim 35 wherein meal content is ≥25% of a usual meal content as used in predetermination of the standard dose.

73. The use of claim 72 wherein meal content is ≥50% of a usual meal content as used in predetermination of the standard dose.

74. The use of claim 35 or 73 wherein meal content is ≤200% of a usual meal content as used in predetermination of the standard dose.

75. The use of claim 35 or 74 wherein meal content is ≤150% of a usual meal content as used in predetermination of the standard dose.

76. The use of claims 1, 3, 5, 25, 33, 35, 38, 43, 45, 53, or 61 wherein the medicament is not to be administered via injection.

77. The use of claims 1, 3, 5, 25, 33, 35, 38, 43, 45, 53, or 61 wherein the medicament comprises a fumaryl diketopiperazine (FDKP) associated with insulin.

78. The use of claims 1, 3, 5, 25, 33, 35, 38, 43, 45, 53, or 61 wherein the medicament is not to be administered by inhalation.

79. The use of claim 1 or 3 wherein the patient is further selected for having an insulin resistance at the higher portion of the insulin resistance spectrum.

What is claimed is:

1. The use of an ultrarapid acting insulin formulation in the manufacture of a medicament for treating a patient with diabetes type 2, wherein the patient is selected from a patient with diabetes type 2 currently being treated with a suppressor of hepatic glucose output and an insulin secretagogue;

the patient is to be discontinued from the treatment with the insulin secretagogue; and

wherein the medicament is to be routinely administered with at least one established meal.

2. The use of claim 1 wherein treatment with the suppressor of hepatic glucose output is also discontinued.

3. The use of an ultrarapid-acting insulin formulation in the manufacture of a medicament for treating a patient with diabetes type 2 wherein the patient is currently being treated with a suppressor of hepatic glucose output who is in need of improved glycemic control and who would be a candidate for combination treatment with said suppressor of hepatic glucose output and an insulin secretagogue; wherein the patient is to be continued on treatment with a suppressor of hepatic glucose output, the patient is not to be treated with an insulin secretagogue, and wherein the medicament is to be routinely administered with at least one established meal.

4. The use of claim 2 wherein the patient is further selected for having an insulin resistance at the lower portion of the insulin resistance spectrum.

5. The use of claim 1 or 3 wherein the patient is further selected for needing to reduce or avoid weight gain.

6. The use of claim 1 or 3 wherein the medicament is not to be administered via injection.

7. The use of claim 3 or 6 wherein patient is further a candidate for treatment with insulin and is further selected on the basis of being needle-phobic or desiring to avoid frequent injections.

8. The use of claim 1 or 3 wherein the suppressor of hepatic glucose output is metformin.

9. The use of claim 1 or 3 wherein the insulin secretagogue is a sulfonylurea.

10. The use of claim 1 or 3 wherein the patient is further selected for having well or moderately controlled fasting blood glucose.

11. The use of claim 1 or 3 wherein administration is by inhalation.

12. The use of claims 1, 3 or 11 wherein the medicament is a dry powder.

13. The use of claims 1, 3 or 12 wherein the ultrarapid acting insulin formulation comprises a fumaryl diketopiperazine (FDKP) associated with insulin.

14. The use of claims 1, 3 or 12 wherein the ultrarapid acting insulin formulation comprises insulin-FDKP.

15. The use of claim 1 or 3 wherein the patient is further selected for having an HbA1c level ≥8.

16. The use of claim 1 or 3 wherein the patient is further selected for having an elevated mean amplitude of glucose excursions.

17. The use of claim 1 or 3 wherein said medicament is to be administered with each meal containing more than 15 g of carbohydrate.

18. The use of claim 1 or 3 wherein said medicament is to be administered at a dosage sufficient to maximally reduce hepatic glucose output within 60 minutes of administration.

19. The use of claim 1 or 3 wherein said medicament is to be administered at a dosage within the range of 1 to 32 subcutaneous equivalent units.

20. The use of claim 1 or 3 wherein the patient is further selected for having an insulin resistance at the higher portion of the insulin resistance spectrum.

21. The use of claims 1 or 3 wherein the ultrarapid acting insulin formulation comprises an insulin analog.

22. The use of claim 21 wherein the insulin analog is insulin aspart, insulin glulisine, or insulin lispro.

23. The use of claims 1 or 3 wherein peak insulin concentration occurs about 10 minutes to about 30 minutes after administering said ultrarapid insulin medicament.

24. The use of claims 1 or 3 wherein peak insulin concentration occurs about 12 minutes to about 14 minutes after administering said ultrarapid insulin medicament.

25. The use of claims 1 or 3 wherein a maximal glucose elimination rate occurs about 30 minutes to about 90 minutes after administration.

26. The use of claims 1 or 3 wherein a maximal glucose elimination rate occurs about 45 minutes to about 60 minutes after administration.

27. The use of claims 1 or 3, wherein the patient has a poorly controlled postprandial blood glucose level.

28. The use of claim 27, wherein the postprandial blood glucose level is at least about 200 mg/dL, or at least about 180 mg/dL, or at least about 140 mg/dL.

29. The use of claims 1 or 3, wherein the patient has an HbA1c level less than about 8.4%.

30. The use of claims 1 or 3, wherein the patient has well-controlled fasting blood glucose.

31. The method of claim 30, wherein the fasting blood glucose is about 110 mg/dL or lower, or about 130 mg/dL or lower.

32. The use of claims 1 or 3, wherein the patient has moderately controlled fasting blood glucose.

33. The use of claim 32, wherein the fasting blood glucose is about 154 mg/dL or lower, or about 180 mg/dL or lower, or about 192 mg/dL or lower.

34. The use of claims 1 or 3 wherein blood insulin concentration decreases from maximal to half maximal within about 80 minutes after T_{max}.

35. The use of claim 34 wherein blood insulin concentration decreases from maximal to half maximal within about 50 minutes after T_{max}.

36. The use of claim 35 wherein blood insulin concentration decreases from maximal to half maximal within about 35 minutes after T_{max}.