CLAIMS

We claim:

1. A packaged product comprising one or more nutritional formulations and packaging, labeling, and instructions for using the one or more formulations, wherein at least one of the one or more formulations comprises a mixture of omega-6 fatty acid(s) and antioxidant(s); wherein the one or more formulation(s) collectively provide(s) a dosage of from 1 to 40g of omega-6 fatty acids and from 25mg to 10g of antioxidants, wherein the dosage of antioxidants comprises at least 5mg of one or more polyphenols.

2. The product according to claim 1, wherein the nutritional formulation(s) collectively comprise phytochemicals selected from the group consisting of monophenols, phenolic acids, hydroxycinnamic acids, tyrosols, monoterpenes, saponins, lipids, triterpenoids, betalains, organosulfides, indoles, glucosinolates, and sulphur compounds.

3. The product according to claim 1 or 2, wherein the omega-6 fatty acids comprise one or more fatty acids selected from the group consisting of linoleic (C18:2), conjugated-linoleic (C18:2), gamma-linolenic (C18:3), eicosadienoic (C20:2), di-homo-gamma-linolenic (C20:3), and arachidonic (C20:4).

4. The product according to anyone of claims 1 to 3, wherein the antioxidants are selected from the group consisting of flavonoids, flavones, isoflavones, catechins, anthocyanidins, isothiocyanates, carotenoids, allyl sulfides, terpenes, limonoids, phytosterols, beta carotene, ascorbic acid (vitamin C), folic acid, Se, superoxide dismutase (SOD), catalase, glutathione peroxidase (GSHpx), coenzyme Q10 (CoQ10), glutathione, and vitamin E.

5. The product according to any one of claims 1 to 4, wherein the one or more polyphenols is selected from the group consisting of flavonoids, phenolic acids, lignans, stilbenes, punicalagins, hydroxycinnamic acids, and tyrosols.

6. The product according to any one of claims 1 to 5, wherein the antioxidants comprise one or more phytosterols selected from the group consisting of campesterol, sitosterol, gamma sitosterol, and stigmasterol.

7. The product according to any one of claims 1 to 6, wherein the antioxidants comprise one or more phytosterols and wherein the dosage of the one or more phytosterols is greater than 150mg.

8. The product according to any one of claims 1 to 7, wherein the formulation(s) comprise(s) one or more food items and/or supplements.

9. The product according to any one of claims 1 to 8, wherein the product is formulated for an individual who belongs to a diet cohort selected from one or more of the following:

(i) a diet cohort based on primary dietary ingredients of the individual's daily or weekly diet which is determined by comparing levels of one or more of antioxidants, phytochemicals, vitamins, minerals, lipids, carbohydrates, and proteins from foods of the individual's diet with levels in a set of predetermined cohorts;

(ii) a diet cohort based on average daily consumption of one or more of grains, vegetables, fruits, legumes, dairy, meats, seafood, herbs, sweeteners, and beverages;

(iii) a diet cohort which is predominantly vegetable-based, meat-based or seafood-based; or

(iv) a diet cohort based on gender, age, genetic profile, family history, climactic temperature, or medical condition.

10. The product according to any one of claims 1 to 9, wherein the formulation(s) collectively comprise omega-9 fatty acids in an amount which is less than 60% by weight of the total lipids in the formulation(s).

11. The product according to any one of claims 1 to 10, wherein the formulation(s) collectively comprise omega-6 fatty acids in an amount greater than 20% by weight of the total lipids in the formulation(s).

12. The product according to any one of claims 1 to 11, wherein at least one of the one or more formulations is for topical application via a liquid, powder, cream, or patch formulation.

13. The product according to any one of claims 1 to 12, wherein the one or more formulations collectively comprise one or more of the following:

(i) omega-3 fatty acids, wherein the ratio of omega-6 fatty acids to omega-3 fatty acids is 1:1 to 50:1;

(ii) omega-9 fatty acids, wherein the ratio of omega-9 fatty acids to omega-6 fatty acids is less than 4:1;

(iii) monounsaturated and polyunsaturated fatty acids, wherein the ratio of monounsaturated to polyunsaturated fatty acids is less than 4:1;

(iv) omega-3 fatty acids, wherein the amount of omega-3 fatty acids is less than 20% by weight of the total lipids in the formulation(s);

(v) the dosage of omega-6 fatty acids is less than 30g; or

(vi) omega-3 fatty acids, wherein the dosage of the omega-3 fatty acids in the formulation(s) is less than 2g.

14. The product according to any one of claims 1 to 13, wherein the nutritional formulation(s) comprise(s) one or more of:

(i) omega-3 fatty acids, wherein the ratio of omega-6 fatty acids to omega-3 fatty acids is 6:1 to 25:1;

(ii) omega-9 fatty acids, wherein the ratio of omega-9 fatty acids to omega-6 fatty acids is less than 2:1;

(iii) monounsaturated and polyunsaturated fatty acids, wherein the ratio of monounsaturated to polyunsaturated fatty acids ratio is less than 2:1;

(iv) omega-9 fatty acids, wherein the amount of omega-9 fatty acids is less than 40% by weight of the total lipids in the formulation(s);

(v) omega-6 fatty acids in an amount greater than 35% by weight of the total lipids in the formulation(s);

(vi) omega-3 fatty acids, in an amount less than 10% by weight of the total lipids in the formulation(s);

(vii) omega-6 fatty acids in a dosage less than 20g; or

(viii) omega-3 fatty acids, in a dosage less than 1g.

15. The product according to any one of claims 1 to 14, wherein the one or more formulations collectively comprise:

(i) one or more polyphenols in dosage less than 300mg; and/or

(ii) folate in a dosage of 100-1000 mcg; and/or

(iii) one or more phytosterols in a dosage of 150-1000 mg; and/or

(iv) one or more carotenoids in a dosage of 100-14,000 mcg; and/or

(v) betaine and/or choline in a dosage of 25-600 mg; and/or

(vi) Se in a dosage of 10-135 mcg; and/or

(vii) one or more fibers in a dosage of 5-50g; and/or

(viii) Vitamin E-alpha/gamma in an amount of 0.01-0.30% by weight of the total lipids in the formulation(s).

16. The product according to any one of claims 1 to 15, wherein the formulation(s) comprise(s):

(i) one or more polyphenols in a dosage of less than 140mg; and/or

(ii) folate in a dosage of less than 400 mcg; and/or

(iii) one or more phytosterols in a dosage of less than 550 mg; and/or

(iv) one or more carotenoids in a dosage of less than 3,000 mcg; and/or

(v) betaine and/or choline in a dosage of less than 200 mg; and/or

(vi) Se in a dosage of less than 35 mcg; and/or

(vii) one or more fibers in a dosage of less than 20g; and/or

(viii) Vitamin E-alpha/gamma in an amount of 0.01-0.05% by weight of the total lipids in the formulation(s).

17. The product according to any one of claims 1 to 16, wherein one of the one or more formulations, provides:

(i) one or more polyphenols in a dosage less than 5mg but collectively the formulations provide greater than 5mg of polyphenols; and/or

(ii) antioxidants in a dosage less than 25mg, but collectively the formulations provide from 25mg to 10g of antioxidants; and/or

(iii) omega-6 fatty acids in a dosage less than 1g, but collectively the formulations provide from 1g to 40g of omega-6 fatty acids.

18. The product according to any one of claims 1 to 17, wherein:

(i) the product comprises formulation(s) which collectively provide an amount of nutrients from 0.0001 to 100 g/kg body weight; and/or

(ii) the product comprises from 2-20 daily formulations for daily consumption by an individual, collectively comprising 40-80% of the individual's daily calories; and/or

(iii) the product comprises 10-50% calories from protein, 15-50% calories from lipids, and 35-85% calories from carbohydrates; and/or

(iv) the product comprises 2-20 daily formulations for daily consumption by an individual, which collectively deliver at least 50% of daily micronutrients for the individual; and/or

(v) the product comprises at least one of: vegetable or vegetable juice packs, fruit or fruit juice packs, dry grain packs, cereal packs, legume, grain, nuts, or seeds packs, meat or seafood packs, or herbs, lipids, meals, snack, side dish, salad, desserts, milks, powder, puree, or yogurt packs; and/or

(vi) the product comprises a medicine for prophylaxis or therapy of a chronic medical condition.

19. The product according to any one of claims 1 to 18, wherein the formulation(s) collectively comprise(s) phytochemicals, lipids, antioxidants, vitamins, minerals, probiotics, prebiotics, microorganisms, and fiber.

20. The product according to any one of claims 1 to 19, wherein the formulation(s) is/are effective to aid acid-base balance in the individual.

21. The product according to any one of claims 1 to 19, for use in the prophylaxis or treatment of a medical condition or disease in the individual.

22. The product for use according to claim 21, wherein the medical condition or disease is selected from menopause, aging, allergy, musculoskeletal disorders, vascular diseases, hypercholesterolemia, mood swing, reduced cognitive function, cancer, neural

disorders, mental disorders, renal diseases, endocrine disorders, thyroid disturbances, weight gain, obesity, diabetes, digestive system disorders, reproductive disorders, infant abnormalities, pulmonary disorders, ophthalmologic disorders, dermatological disorders, sleep disorders, dental diseases, autoimmune diseases, infectious diseases, and inflammatory diseases.

23. A method of preparing one or more nutritional formulations for an individual, the method comprising the steps of:

(a) determining for the individual a diet cohort based on dietary preferences and/or a demographic factor; and

(b) on the basis of the diet cohort selecting and preparing one or more nutritional formulations for the individual, including at least one formulation comprising omega-6 fatty acid(s) and antioxidant(s);

wherein the one or more formulations collectively provide to the individual a daily dosage of from 1g to 40g of omega-6 fatty acids and from 25mg to 10g of antioxidants comprising one or more polyphenols in a daily dosage of greater than 5mg.

24. The method according to claim 23, wherein:

- the omega-6 fatty acids comprise one or more fatty acids selected from the group consisting of linoleic (C18:2), conjugated-linoleic (C18:2), gamma-linolenic (C18:3), eicosadienoic (C20:2), di-homo-gamma-linolenic (C20:3), and arachidonic (C20:4), and/or

- the antioxidants comprise at least one polyphenol selected from the group consisting of flavonoids, flavones, isoflavones, catechins, anthocyanidins, phenolic acids, lignans, stilbenes, punicalagins, hydroxycinnamic acids, and tyrosols, and/or isothiocyanates, carotenoids, allyl sulfides, terpenes, limonoids, phytosterols, ascorbic acid (vitamin C), folic acid, selenium, superoxide dismutase (SOD), catalase, glutathione peroxidase (GSHpx), coenzyme Q10 (CoQ10), glutathione, and vitamin E.

25. The method according to any one of claims 23 or 24, wherein the one or more nutritional formulation(s) collectively comprise(s) phytochemicals, lipids, antioxidants, vitamins, minerals, probiotics, prebiotics, microorganisms, and fiber.

26. The method according to any one of claims 23 to 25, wherein the individual belongs to a diet cohort selected from one or more of the following:

(i) a diet cohort based on primary dietary ingredients of the individual's daily or weekly diet which is determined by comparing levels of one or more of antioxidants, phytochemicals, vitamins, minerals, lipids, carbohydrates, and proteins from foods of the individual's diet with levels in a set of predetermined cohorts;

(ii) a diet cohort based on average daily consumption of one or more of grains, vegetables, fruits, legumes, dairy, meats, seafood, herbs, sweeteners, and beverages;

(iii) a diet cohort which is predominantly vegetable-based, meat-based or seafood-based; or

(iv) a diet cohort based on gender, age, genetic profile, family history, climactic temperature, or medical condition.

27. The method according to any one of claims 23 to 26, wherein the formulation(s) comprise(s) one or more of:

(i) micronutrients;

(ii) less than 500 calories or less than 25% of daily calories; or

(iii) lipids from natural sources, wherein the natural sources are selected from the group consisting of oils, butters, margarines, nuts, and seeds.

28. The method according to any one of claims 23 to 27, wherein the formulation(s) comprise(s) one or more food items and/or supplements.

29. A method according to any one of claims 23 to 28, wherein the food items are selected based on the methods of processing employed to prepare the formulation or food item and wherein the processing is selected from hulling, removing a layer, drying, providing fresh, roasting, and grilling.

30. The method according to any one of claims 23 to 29, wherein the one or more formulations comprise one or more nutrients for topical application as a liquid, powder, cream, or patch formulation.

31. The method according to any one of claims 23 to 30, wherein the formulation(s) collectively comprise one or more of:

(i) omega-3 fatty acids, wherein the ratio of omega-6 fatty acids to omega-3 fatty acids is greater than 1:1-50:1;

(ii) omega-9 fatty acids, wherein the ratio of omega-9 fatty acids to omega-6 fatty acids is less than 6:1;

(iii) monounsaturated and polyunsaturated fatty acids, wherein the ratio of monounsaturated to polyunsaturated fatty acids is less than 6:1;

(iv) omega-9 fatty acids in an amount less than 60% by weight of the total lipids in the formulations;

(v) omega-6 fatty acids in an amount greater than 20% by weight of the total lipids in the formulation;

(vi) omega-3 fatty acids in an amount less than 20% by weight of the total lipids in the formulations;

(vii) the dosage of omega-6 fatty acids is less than 35g; or

(viii) omega-3 fatty acids in a dosage of less than 2g.

32. The method according to any one of claims 23 to 31, wherein the formulation(s) comprise(s):

(i) one or more polyphenols in a dosage of less than 300mg; and/or

(ii) folate in a dosage of less than 1000 mcg; and/or

(iii) one or more phytosterols in a dosage of less than 1000 mg; and/or

(iv) one or more carotenoids in a dosage of less than 14,000 mcg; and/or

(v) betaine and/or choline in a dosage of less than 600 mg; and/or

(vi) Se in a dosage of less than 135 mcg; and/or

(vii) one or more fibers in a dosage of less than 50g; and/or

(viii) Vitamin E-alpha/gamma 0.01-0.30% by weight of the total lipids in the formulation(s); and/or

(ix) antioxidants in a dosage of less than 6, 4, or 2g.

33. The method according to any one of claims 23 to 32, wherein the nutritional formulation(s) collectively comprise phytochemicals selected from the group consisting of

monophenols, phenolic acids, hydroxycinnamic acids, tyrosols, monoterpenes, saponins, triterpenoids, betalains, organosulfides, indoles, glucosinolates, and sulfur compounds.

34. A method according to any one of claims 23 to 33, further comprising the step of preparing a list for the individual, wherein the list includes:

(i) a predetermined natural source of lipids, the source selected from oils, butters, margarines, nuts and seeds, and optionally one or more of nutrients selected from antioxidants, phytochemicals, vitamins and minerals in amounts that optimizes dietary nutrients such that the individual's lipid intake provides a beneficial effect to the individual; and/or

(ii) a recommended consumption of food items over at least one week; and/or

(iii) food items that should not be included in the individual's daily diet; food items that should be limited in the individual's daily diet; or food items that should be added to the individual's daily diet.

35. The method according to any one of claims 23 to 34, further comprising the step of combining the one or more formulation(s) into a packaged product which further comprises:

(i) individual portions of food items for daily consumption;

(ii) individual portions of food items for supplementation of daily diet of the individual;

(iii) a label comprising at least one indication of the suitability of the formulations or packages for a consumer with a specific dietary profile or cohort;

(iv) an indication of the upper limit of average daily consumption of items in the in the product; or

(v) at least one of: vegetable or vegetable juice packs, fruit or fruit juice packs, dry grain packs, cereal packs, legume, grain, nuts, or seeds packs, meat or seafood packs, or herbs, lipids, meals, snack, side dish, salad, desserts, milks, powder, puree, or yogurt packs.

36. The method according to any one of claims 23 to 35, wherein the one or more formulations, food items and/or supplements are prepared for prophylaxis or treatment of a medical condition.

37. A computer system configured to computationally implement a method according to any one of claims 23 to 35, comprising:

(a) a computing device having a memory;

(b) an input device for entering information regarding the individual's actual dietary intake into the memory;

(c) a database in the memory for storing the information;

(d) a first program module, for execution in the computing device, for determining a dietary cohort of the individual corresponding to the individual's actual dietary intake, wherein the program operates in response to remote user inputs of dietary cohorts and/or habits; wherein the dietary cohort of the individual is

(i) predetermined and entered directly in the computing device; and/or

(ii) determined either manually or computationally in response to remote user inputs of dietary habits via a web connection; and/or

(iii) selected from predominantly vegetable-based, seafood based and meat based;

(e) a nutrient database for storing dietary guidelines relative to dietary cohorts of an individual; wherein optionally the nutrient database comprises suitable ranges for average daily dietary consumption of nutrients corresponding to each dietary cohort, and/or suitable ranges for daily dietary consumption of carbohydrates, protein, vitamins, minerals and phytochemicals;

(f) a knowledge database having rules for manipulating the information in the database to provide a recommended future nutrition program for the individual, the nutrition program comprising one or more of nutrients selected from antioxidants, phytochemicals, lipids, vitamins and minerals in amounts that provide a beneficial effect to the individual, when a suitable daily dosage of omega-6 fatty acids, antioxidants, and polyphenols is included in the program;

(g) a second program module, for execution in the computing device, for applying the rules in the knowledge database to the information in the database and to the guidelines in the nutrient database and for generating a nutrition program for the individual in a result database; and

(h) means for outputting the contents of the result database, under the direction of the second program module,

wherein the nutrition program comprises a listing of formulations, and optionally food items, wherein from 1 to 40g of omega-6 fatty acids and from 25mg to 10g of

antioxidants comprising at least 5mg of one or more polyphenols are included in the program for daily consumption by the individual.

38. Use of the product according to any one of claims 1 to 19 in the manufacture of a medicament for prophylaxis or treatment of a medical condition or disease in the individual, wherein the medical condition or disease is selected from menopause, aging, allergy, musculoskeletal disorders, vascular diseases, hypercholesterolemia, mood swing, reduced cognitive function, cancer, neural disorders, mental disorders, renal diseases, endocrine disorders, thyroid disturbances, weight gain, obesity, diabetes, digestive system disorders, reproductive disorders, infant abnormalities, pulmonary disorders, ophthalmologic disorders, dermatological disorders, sleep disorders, dental diseases, autoimmune diseases, infectious diseases, and inflammatory diseases.