NOVEL PROCESS FOR PRODUCING A FOOD BASED ON LEAVENED DOUGH, LEAVENED PUFF PASTRY DOUGH OR PUFF PASTRY DOUGH

Technical Field

The present invention relates to a process for producing a food based on leavened dough, leavened puff pastry dough or puff pastry dough and also to the food prepared according to this process, and in particular to the Viennese pastries (called also Danish pastry.

Background

Leavened, leavened puff pastry and puff pastry doughs prove by virtue of the release of carbon dioxide caused by the alcoholic fermentation of the sugars by the yeast, and of the release of water vapour during the baking phase. The proving of these doughs requires for a lengthy period of time (between one and three hours) an expensive proving chamber which consumes large amounts of energy. Furthermore, the fragility of the fresh proven dough limits the manipulation, handling and/or transportation possibilities.

Summary

One of the objectives of the present disclosure is to offer frozen, deep frozen or baked foods, based on leavened dough, leavened puff pastry dough or puff pastry dough, which have a much more voluminous and more even appearance than the foods obtained according to the prior art processes.

The present disclosure relates to a process for producing foods based on leavened dough, leavened puff pastry dough or puff pastry dough, and also to foods prepared according to this process, and in particular Viennese pastries. The process of the present disclosure comprises a step of forming the food product in a curved shape (in the form of an arch) and, preferably in an ulterior phase, baking the food product in said curved shape in a raised position (up-right position) on a baking support, or in a position allowing the hot air of the oven to circulate around the food product through the canals formed by curves/arches in the dough.

The inventors have discovered, surprisingly, that the shape of the raw food based on leavened dough, leavened puff pastry dough or puff pastry dough, and the positioning thereof during the baking step, are essential elements to the quality of the final product obtained after baking. Indeed, the positioning of the food in a curved shape in a raised (up-right position) position, on one or more support points, preferably in the shape of an arch, or in the form of multiple arches such as in an undulated or corrugated pattern during baking,

allows the flow of hot air circulating in the oven to envelop the food through the formed channels/arches, and to penetrate to the heart of the dough more homogeneously (simultaneous penetration above and below the food) even when said product is being placed flat on a baking support, thereby contributing to increasing the volume and to improving the appearance, the evenness and the homogeneity of the final product.

Owing to a better distribution of heat in the product during the baking step, and to a greater heat exchange through the increase in the surface area subjected to the flow of hot air, the baking time is reduced by 2 to 10%, preferably by 2 to 8%, or 5 to 10% depending on the weight of the product, the baking temperature, and the baking equipment, thereby allowing savings in terms of energy and therefore in terms of production cost.

In one aspect of the present disclosure, there is provided a process for producing a food based on leavened puff pastry dough or puff pastry dough, comprising the following steps:

(i) preparing a leavened puff pastry dough or puff pastry dough comprising flour and water,

(ii) kneading the dough,

(iii) fashioning the dough to obtain the raw food,

characterized in that it comprises the following steps:

(iv) shaping at least one surface of the raw food in the shape of a single arch, or in the form of multiple, tandemly arranged arches, wherein said food product comprises two or more support points located at the ends of said food, formed by said arch or tandemly arranged arches,

(v) freezing and/or deep-freezing the raw food in said arch or multiple arch shape,

(vi) positioning the frozen or deep-frozen food on a baking support in a raised (up-right position) position on said at least two support points, in the shape of an arch, and baking the food product whereby the concave surface of said food is facing the baking support; or

positioning the frozen or deep-frozen food on a baking support on said multiple arch-shaped surface, the more than two support points contacting the baking support in an undulated manner; and

baking the food product.

In another aspect of the present disclosure, there is provided a frozen or deep-frozen Viennese pastries, croissants, or chocolate rolls, having an upper and a lower surface, characterised in that at least said lower surface comprises the shape of multiple arches which are tandemly arranged.

The present disclosure also provides the following:

1. A process for producing a food based on leavened dough, leavened puff pastry dough or puff pastry dough, comprising at least the following steps:

(i) preparing a leavened dough, leavened puff pastry dough or puff pastry dough comprising flour and water,

(ii) kneading the dough,

(iii) fashioning the dough to obtain the raw food,

characterized in that it comprises the following steps:

(iv) shaping at least one surface of the raw food in a curved or corrugated shape, preferably in the shape of a single arch, or in the form of multiple, tandemly arranged arches,

(v) freezing and/or deep-freezing the raw food having said arch or multiple arch shape, in order to allow, preferably in an ulterior phase of baking, the flow of hot air circulating in an oven to envelop the food through the channel(s) or arch(es) formed by said arch(es) or corrugated pattern(s) in said surface of the food product and to penetrate in the heart of the dough allowing a more uniform and homogenous baking. In some embodiments, said arch-shaping can be done on both surfaces. For chocolate rolls, shaping only one surface (i.e. the lower surface, contacting the baking support) can be preferred. For croissants, at least the lower surface (the surface contacting the baking support) needs to be shaped as defined herein, while the upper surface can either be flat or shaped as defined herein as well.

2. Process according to 1, in which the curved or corrugated surface of the frozen or deep-frozen food comprises at least one support point, preferably at least two or more support points located at the ends of said food, formed by said arch or tandemly arranged arches.

3. Process according to 1, wherein said frozen or deep frozen food product has a single rounded arch shape, the height of the curvature being between 0,4 and 10 cm, preferably between 0,5 and 5 cm.

4. Process according to 1, in which the corrugated surface of the frozen or deep-frozen food comprises more than two support points, alternating with two or more channels or arches. Said arches hence are tandemly arranged on at least the lower surface of the food, i.e. the side that will be in contact with the baking support.

5. Process according to 4, wherein the surface of said frozen or deep frozen food product has tandemly arranged longitudinal channels having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1,2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.

6. Process according to anyone of 1 to 5, comprising, after step (ii), a step of laminating and a step of folding the dough.

7. Process according to anyone of 1 to 6, comprising, after step (ii) and the optional laminating and folding steps, a step of cooling the dough.

8. Process according to anyone of 1 to 7, comprising, after step (ii) and the optional laminating, folding and cooling steps, a further step of laminating the dough.

9. Process according to 8, in which, at the end of the laminating step, the thickness of the dough is between 0,5 and 3 cm.

10. Process according to anyone of 1 to 9, comprising, between steps (ii) and (iii), a step of cutting up the dough.

11. Process according to anyone of 1 to 10, comprising, between steps (iii) and (iv), a step of rolling out the raw food.

12. Process according to 11, in which, at the end of the rolling out step, the thickness of the raw food is between 5 and 20 mm.

13. Process according to anyone of 1 to 3, and 6 to 11, wherein the shaping step (iv) is carried out in a mould with at least one rounded shape, preferably a mould which has multiple tandemly arranged rounded shapes.

14. Process according to 13, in which the shaping step (iv) is carried out in a mould with a rounded shape, having a curvature height of between 1 and 10 cm.

15. Process according to one of 1, and 4 to 12, wherein the shaping step (iv) is carried out in a mould with an undulated surface enabling the creation of multiple channels separated by tandemly arranged support points in at least one surface of the dough.

16. Process according to 15, in which the shaping step (iv) is carried out in a mould with alternating upper and lower ridges having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1, 2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.

17. Process according to anyone of 1 to 16, in which step (v) is a freezing step carried out at a temperature of between -12°C and -18°C, preferably for a period of between 30 minutes and 1 hour.

18. Process according to anyone of 1 to 17, in which step (v) is a deep-freezing step carried out at a temperature of between -18°C and -40°C, preferably for a period of between 30 minutes and 1 hour.

19. Process according to anyone of 1 to 18, in which step (v) is a freezing step carried out at a temperature of between -12°C and -18°C, preferably for a period of between 30 minutes and 1 hour, followed by a deep-freezing step carried out at a temperature of between -18°C and -40°C, preferably for a period of between 30 minutes and 1 hour, or vice versa.

20. Process according to anyone of 1, 2, 3, and 6 to 19, comprising after step (v), a step (vi) which comprises in positioning the curved frozen or deep-frozen food on a baking support in a raised (up-right position) position on said at least two support points, in the shape of an arch, and baking the food product.

21. Process according to 20, in which the curved frozen or curved deep-frozen food is positioned on the baking support in a raised (up-right position) position in the shape of an arch, either on one support point whereby the convex surface of said food is facing the baking support, or on at least two support points whereby the concave surface of said food is facing the baking support.

22. Process according to anyone of 1, and 4 to 19, comprising after step (v), a step (vi) which comprises in positioning the corrugated frozen or deep-frozen food on a baking support on said corrugated surface, the more than two support points contacting the baking support in an undulated manner, and baking the food product.

23. Process according to anyone of 20 to 22, in which the oven is a conventional oven or a pulsed air oven, with or without steam.

24. Process according to anyone of 20 to 23, in which step (vi) is carried out at a temperature ranging from 140 to 200°C, preferably for a period ranging from 15 to 30 minutes.

25. Process according to anyone of 1 to 24, in which the leavened dough, leavened puff pastry or puff pastry dough comprises other ingredients chosen from sugar, salt, gluten, yeast and improvers.

The final food product is prepared through baking said curved or corrugated frozen or deep-frozen food product preferably in the shape of an arch, or having at least one surface that comprises two or more arches, on a flat baking support. Due to the curved shape or due to the surface with multiple curves and multiple support points (also called undulated or corrugated shape) of the dough, channels or arches are formed between the bottom layer (lower surface) of the dough and the baking support allowing the flow of hot air in the oven to envelop the food on the top and lower surfaces during ulterior phase of baking.

It has been observed that the shaping of foods in a curved shape and preferably in the shape of an arch, or having at least one surface that comprises two or more arches, and the positioning thereof in a raised (up-right position) position improves not only the appearance and the evenness of the final products obtained after baking, but also reduces the baking time for said foods, the curved ("arch-" or "multiple arch-") shape allowing uniform baking on the top and bottom of the foods, and penetration of the heat to the heart of said products much more rapidly when they are positioned on one, two or more support points (in

the shape of an arch or in the form of two or more arches). In addition, the higher heat of the baking support versus the hot air in the oven is only transferred to the one or more contacting points of the dough, which will reduce the temperature shock. In the prior art processes, dough is contacted with the baking support over its complete lower surface, which results in a temperature shock of said surface. This shock effect is largely reduced in the present disclosure, due to the shape of the dough, which is only in contact with the backing support in the support points. The remaining parts of the lower surface of the dough is surrounded by and baked by hot air during the initial baking step. This again improves the quality of the end product.

The present disclosure further encompasses the following:

26. Frozen or deep-frozen food product based on leavened dough, leavened puff pastry dough or puff pastry dough, produced according to the process of anyone of 1 to 19, said foods preferably being chosen, among others, from Viennese pastries, croissants, chocolate rolls, breads.

27. Frozen or deep-frozen food products based on leavened dough, leavened puff pastry dough or puff pastry dough, having an upper and a lower surface, characterised in that at least said lower surface comprises a curved or corrugated shape, preferably the shape of an arch, or two or more arches which are tandemly arranged.

28. The food product according to 27, wherein said arch or two or more arches form one or more channel(s) between the baking support and the lower side of the food product, which will allow hot air from the oven to envelope the food product in a more homogeneous manner.

29. Frozen or deep-frozen food product according to anyone of 26 to 28, in which the frozen or deep-frozen food comprises at least one support point, and preferably at least two support points located at the ends of said food.

30. Frozen or deep-frozen food product according to anyone of 26 to 29, wherein said frozen or deep frozen food product has a rounded shape with the height of the curvature/arch of between 1 and 10 cm, preferably between 2 and 5 cm.

31. Frozen or deep-frozen food product according to anyone of 26 to 29, in which the frozen or deep-frozen food comprises more than two support points, alternating with two or more channels or arches.

32. Frozen or deep-frozen food product according to 31, wherein at least the lower surface of said frozen or deep frozen food product has tandemly arranged longitudinal channels having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1, 2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.

33. Baked food product based on leavened dough, leavened puff pastry or puff pastry dough, produced according to the process of any one of 20 to 24, said foods preferably being chosen, among others, from Viennese pastries, croissants, chocolate rolls, breads.

Brief description of the Drawings

Figure 1: Depicts two curved croissants according to one embodiment of the current invention, positioned on their convex surface (one support point),

Figure 2: Shows a schematic representation of the concave and convex surfaces (the double arrow represents the height of curvature),

Figure 3: Shows on the left, a non-curved standard croissant (control) obtained according to a prior art process, on the right, a curved croissant according to one embodiment of the invention, in a (up-right position) position via two support points, its concave surface facing the support, and

Figure 4: Shows a curved croissant according to one embodiment of the invention, in a raised (up-right) position via two support points, its concave surface facing the support (height of curvature: 3.2 cm).

Figure 5: Shows a photograph of a curved croissant with multiple curves and multiple support points according to one embodiment of the current invention.

Figure 6: Shows a schematic view of the dough used for a curved croissant according to one embodiment of the current invention, with multiple curves and multiple support points. Each of the one or more arches are in an up-right position, i.e. are substantially perpendicular to the plane of the dough, and/or the baking support.

Figure 7: Shows a photograph of a curved croissant with multiple curves and multiple support points according to one embodiment of the current invention, at both surfaces of the croissant (A). Said croissant is positioned on the baking support via its curved surface (B).

CLAIMS

1. Process for producing a food based on leavened puff pastry dough or puff pastry dough, comprising the following steps:

(i) preparing a leavened puff pastry dough or puff pastry dough comprising flour and water,

(ii) kneading the dough,

(iii) fashioning the dough to obtain the raw food,

characterized in that it comprises the following steps:

(iv) shaping at least one surface of the raw food in the shape of a single arch, or in the form of multiple, tandemly arranged arches, wherein said food product comprises two or more support points located at the ends of said food, formed by said arch or tandemly arranged arches,

(v) freezing and/or deep-freezing the raw food in said arch or multiple arch shape,

(vi) positioning the frozen or deep-frozen food on a baking support in a raised (up-right position) position on said at least two support points, in the shape of an arch, and baking the food product whereby the concave surface of said food is facing the baking support; or

positioning the frozen or deep-frozen food on a baking support on said multiple arch-shaped surface, the more than two support points contacting the baking support in an undulated manner; and

baking the food product.

2. Process according to Claim 1, wherein said frozen or deep frozen food product has a single arch shape, the height of the arch being between 0,4 and 10 cm, preferably between 0,5 and 5 cm.

3. Process according to Claim 1, in which the surface of the frozen or deep-frozen food comprises more than two support points, alternating with two or more arches.

4. Process according to Claim 3, wherein the surface of said frozen or deep frozen food product has tandemly arranged longitudinal arches having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1,2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.

5. Process according to anyone of Claims 1 to 4, comprising, after step (ii), a step of laminating and a step of folding the dough.

6. Process according to anyone of Claims 1 to 5, comprising, after step (ii) and the optional laminating and folding steps, a step of cooling the dough.

7. Process according to anyone of Claims 1 to 6, comprising, after step (ii) and the optional laminating, folding and cooling steps, a further step of laminating the dough.

8. Process according to Claim 7, in which, at the end of the laminating step, the thickness of the dough is between 0,5 and 3 cm.

9. Process according to anyone of Claims 1 to 8, comprising, between steps (ii) and (iii), a step of cutting up the dough.

10. Process according to anyone of Claims 1 to 9, comprising, between steps (iii) and (iv), a step of rolling out the raw food.

11. Process according to Claim 10, in which, at the end of the rolling out step, the thickness of the raw food is between 5 and 20 mm.

12. Process according to anyone of Claims 1 to 11, wherein the shaping step (iv) is carried out in a mould with at least one rounded shape, preferably a mould which has multiple tandemly arranged rounded shapes.

13. Process according to Claim 12, in which the shaping step (iv) is carried out in a mould with a rounded shape, having a curvature height of between 1 and 10 cm.

14. Process according to one of Claims 1 to 11, wherein the shaping step (iv) is carried out in a mould with an undulated surface enabling the creation of multiple arches separated by tandemly arranged support points in at least one surface of the dough.

15. Process according to Claim 14, in which the shaping step (iv) is carried out in a mould with alternating upper and lower ridges having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1, 2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.

16. Process according to anyone of Claims 1 to 15, in which step (v) is a freezing step carried out at a temperature of between -12°C and -18°C, preferably for a period of between 30 minutes and 1 hour, and/or a deep-freezing step carried out at a temperature of between -18°C and -40°C, preferably for a period of between 30 minutes and 1 hour, or vice versa.

17. Process according to anyone of Claims to 16, in which the oven is a conventional oven or a pulsed air oven, with or without steam.

18. Process according to anyone of Claims 1 to 17, in which step (vi) is carried out at a temperature ranging from 140 to 200°C, preferably for a period ranging from 15 to 30 minutes.

19. Process according to anyone of Claims 1 to 18, in which the leavened puff pastry or puff pastry dough comprises other ingredients chosen from sugar, salt, gluten, yeast and improvers.

20. Frozen or deep-frozen Viennese pastries, croissants, or chocolate rolls, having an upper and a lower surface, characterised in that at least said lower surface comprises the shape of multiple arches which are tandemly arranged.

21. Viennese pastries, croissants, or chocolate rolls according to claim 20, wherein said multiple arches form one or more channel(s) between the baking support and the lower side of the food product.

22. Viennese pastries, croissants, or chocolate rolls according to Claim 20 or 21, wherein said surface of said frozen or deep frozen food product has tandemly arranged longitudinal arches having dimensions of between 0.4 and 2 cm, preferably of between 0,5 and 1,2 cm, more preferably of about 0,9 cm width and 0,5 cm depth.