

【DESCRIPTION】

【Invention Title】

BREAD-BAKING COMPOSITION AND METHOD FOR MAINTAINING
STABILITY, UPON FREEZING AND THAWING, OF BREAD TO BE
DISTRIBUTED IN FROZEN STATE

【Technical Field】

[0001] The present application relates to a composition for baking and a method for maintaining the freezing and unfreezing stability of a dough for freezing distribution or a bread prepared therefrom using the same.

【Background Art】

[0002] In terms of food processing, breads are made with wheat flour or other grain flour as the main ingredient, and are one that is fermented and kneaded after adding food or food additives to it, one that is kneaded without fermentation, or those cooked. For example, the bread includes plain bread, cake, castella, donut, pizza, pastry (pie), hot dog, and the like. Among them, the pastry is a layered bread made by wrapping butterfat in the dough containing sugar, oil, and eggs and then repeatedly push-folding it, which is also made with meat content, almonds, fruit, cream cheese and the like in it.

[0003] One of the conventional distribution methods of breads was to distribute the breads in the form of frozen dough, then prepare and consume the finished products of breads through heating and cooking before ingestion of the products. However, in this case, there is a disadvantage that the quality of the dough changes when the cooking time is long or when the frozen dough is unfreezing. To prevent this problem, breads can be prepared in the form of finished products and then distributed in a frozen form. However, even in this case, there is a

problem that the water retention capacity, volume, mouthfeel, etc. of breads are deteriorated during unfreezing after freezing.

[0004] Accordingly, the present inventors have completed the present application by developing a baking improver suitable for preparing a bread for freezing distribution or a dough for freezing distribution.

【Disclosure】

【Technical Problem】

[0005] The present application intends to provide a composition for baking capable of maintaining the freezing and unfreezing stability by extending the freshness of the bread and/or the dough during freezing and unfreezing of the bread and/or the dough that are being frozen and distributed.

[0006] The present application intends to provide a bread and/or dough for freezing distribution capable of maintaining stability during the freezing and unfreezing process after distribution in a frozen state.

[0007] Furthermore, the present application intends to provide a method for maintaining the freezing and unfreezing stability of a bread and/or dough for freezing distribution.

【Technical Solution】

[0008] To this end,

[0009] an aspect of the present application provides a composition for baking comprising two or more enzymes and two or more emulsifiers.

[0010] The composition for baking according to the present application may be a composition for maintaining the freezing and unfreezing stability of a bread for freezing distribution.

[0011] In the present application, the 'bread' refers to a

product that is made with wheat flour as a main raw material, which is mixed with water, fermented, and then baked in an oven, and may comprise any bread without limitation as long as it is classified as breads in the relevant technical field. Specific examples of the breads comprise, but is not limited to, plain bread, baguette, sweet dough bread, pastry, hamburger bread, pizza, cake, donut, cookie, etc.

[0012] In the present application, the term 'freezing and unfreezing stability' may indicate that the bread prepared after unfreezing a frozen dough, or the frozen bread after preparing, maintains excellent physical properties after unfreezing. For example, the freezing and unfreezing stability may be confirmed through excellent physical properties such as the degree of swelling, water retention capacity, hardness, and sensory properties of the prepared bread when the bread is prepared after unfreezing the frozen dough. In addition, the freezing and unfreezing stability may be confirmed through a decrease in the degree of change in physical properties such as volume, water retention capacity, and hardness before freezing and after unfreezing, when unfreezing bread frozen after preparing.

[0013] In the present application, the term 'freezing and unfreezing stability of bread for freezing distribution' is a term that comprises the stability of dough for the preparation of bread that is distributed after being frozen, stability of baked bread after unfreezing frozen dough, and freezing and unfreezing stability of frozen bread after baking.

[0014]

[0015] The composition for baking of the present application may comprise two or more enzymes in order to improve the structural strength of bread and/or dough or to delay aging.

[0016] The enzyme can be used without limitation as long as it is an enzyme that can be added to bread, and may be, for

example, a carbohydrate hydrolase.

[0017] The carbohydrate hydrolase is an enzyme that hydrolyzes carbohydrates in wheat flour in bread, and may be, for example, amylase, hemicellulase or cellulase, and specifically may comprise amylase and hemicellulase.

[0018] In one embodiment, the amylase may comprise α -amylase.

[0019] In one embodiment, the enzyme, by including α -amylase and hemicellulase together, can excellently improve the freezing and unfreezing stability according to the present application compared to the combination of two other enzymes, and thus can extend the freshness of dough and/or bread, increase the water retention capacity, delay the aging, increase the volume, and increase the mouthfeel.

[0020] The amylase may be to decompose polysaccharides, such as starch, contained in wheat flour, etc., into disaccharides or monosaccharides during the preparation of bread. The α -amylase may act on damaged starch during the preparation of bread to create a nutrient source for yeast, thereby exhibiting the effect of improving the uniformity of pores in the bread or the oven spring. On the other hand, the α -amylase may increase the softness of the dough and the prepared bread and increase the gas retention ability to exhibit the effect of increasing the volume of the bread. In addition, the α -amylase may have the effect of improving the physical properties of dough and increasing the volume of the bread, thereby improving the quality of the bread.

[0021] The amylase is for the improvement of the physical properties of dough and the improvement of the physical properties of the prepared bread, and may be contained, for example, but is not limited to, in the composition for baking in a content of 0.001 to 0.05 % by weight, 0.005 to 0.050 % by weight, 0.010 to 0.045 % by weight, 0.015 to 0.04 % by weight, 0.015 to 0.03 % by weight, or 0.015 to 0.02 % by weight.

[0022] The hemicellulase may decompose the insoluble dietary fiber of dough, such as pentosan, into smaller units exhibiting water solubility, thereby exhibiting an effect of increasing physical properties of dough, such as expansibility, gas retention, and oven spring. In addition, the hemicellulase may cause to exhibit an effect of excellently improving the quality such as internal phase, softness, aging delay, color, etc. of the prepared bread.

[0023] The hemicellulase is for the improvement of the physical properties of dough and the improvement of the physical properties of the prepared bread, and may be contained, for example, but is not limited to, in the composition for baking in a content of 0.01 to 0.5 % by weight, 0.05 to 0.50 % by weight, 0.10 to 0.45 % by weight, 0.15 to 0.4 % by weight, 0.15 to 0.3 % by weight, or 0.15 to 0.2 % by weight.

[0024] In consideration of the improvement of the effect of maintaining freezing and unfreezing stability according to the present application, the weight ratio of the first enzyme and the second enzyme contained in the two or more enzymes may be, but is not limited to, 1:15 to 15:1.

[0025] If amylase and hemicellulase are contained as the enzyme, the weight ratio of amylase and hemicellulase may be, but is not limited to, 1:5 to 1:15, 1:7 to 1:13, 1:8 to 1:12, or 1:9 to 1:11. By containing in the above weight ratio, the softness and volume of the prepared bread can be increased, and the aging can be effectively delayed.

[0026]

[0027] The composition for baking of the present application may include two or more emulsifiers in order to delay the aging of bread and/or dough.

[0028] The emulsifier can be used without limitation as long as it is an emulsifier that can be added to bread, and for

example, may be a fatty acid-based emulsifier.

[0029] The fatty acid-based emulsifier is a fatty acid itself or an emulsifier formed by combining fatty acids with other substances, wherein the other substance combined with the fatty acid may be glycerol or an organic acid.

[0030] Specifically, the fatty acid-based emulsifier may be two or more selected from the group consisting of monoglyceride, diglyceride, triglyceride, sodium stearyl lactylate and potassium stearyl lactylate. More specifically, the emulsifier may comprise monoglyceride and sodium stearyl lactylate.

[0031] In one embodiment, if the emulsifier contains monoglyceride and sodium stearyl lactylate, the freezing and unfreezing stability according to the present application may be excellently improved compared to the combination of the other two emulsifiers, thereby prolonging the freshness of dough and/or bread, increasing the water retention capacity, delaying the aging, increasing the volume and increasing the mouthfeel.

[0032] The monoglyceride stabilizes the mixture of water and oils and fats when preparing dough, which controls the viscosity of the dough by changing the properties of the fat crystals. In addition, the monoglyceride may have excellent properties for smoothing the dough through interaction with raw materials of dough, such as starch and protein. Due to these properties, the bread prepared from the dough containing the monoglyceride may exhibit the effect of increasing the volume of the bread.

[0033] The monoglyceride is for the improvement of the physical properties of the dough and the improvement of the physical properties of the prepared bread, and may be contained, for example, but is not limited to, in the composition for baking in a content of 0.1 to 20 % by weight,

0.5 to 15 % by weight, 1 to 15 % by weight, 5 to 15 % by weight, or 8 to 11 % by weight.

[0034] Specifically, there is a problem that, during storage of the dough, amylose in the dough is leached to the surface and thus the dough is aged. On the other hand, the monoglyceride binds to amylose to form an alpha-helix structure, so that starch cannot be recrystallized, thereby inhibiting aging. As a result, if the frozen dough is baked after unfreezing, an excellent bread quality is demonstrated in physical properties such as hardness, as in baking a bread with a non-freezing dough.

[0035] The sodium stearyl lactylate may exhibit the function of a dough conditioner or dough strengthener. Specifically, the sodium stearyl lactylate may induce an increase in the volume of the bread by increasing the binding of the network structure of gluten and thus strengthening the gluten film, while it may have an effect of maintaining the mouthfeel of bread excellently by stably maintaining the starch particles and inhibiting their gelation. In addition, the sodium stearyl lactylate improves the durability of dough and retains hydrated moisture in the starch particles, thereby exhibiting an excellent effect in softening the bread and delaying aging.

[0036] The sodium stearyl lactylate is for the improvement of the physical properties of the dough and the improvement of the physical properties of the prepared bread, and may be contained, for example, but is not limited to, in the composition for baking in a content of 0.1 to 10 % by weight, 0.5 to 8 % by weight, 1 to 7.5 % by weight, 1.5 to 6 % by weight, 2 to 5.5 % by weight, 2.5 to 5 % by weight, 2.5 to 4.5 % by weight, 2.5 to 4 % by weight, or 2.5 to 3.5 % by weight.

[0037] In consideration of the improvement of the effect of

maintaining freezing and unfreezing stability according to the present application, the weight ratio of the first emulsifier and the second emulsifier contained in the two or more emulsifiers may be, but is not limited to, 0.1:1 to 1:0.1.

[0038] If monoglyceride and sodium stearoyl lactylate are contained as the emulsifier, the weight ratio of the monoglyceride and the sodium stearoyl lactylate may be, but is not limited to, 1:0.1 to 1:0.8, 1:0.2 to 1:0.6, 1:0.2 to 1:0.5, or 1:0.3 to 1:0.4. By containing in the above weight ratio, the softness and volume of the prepared bread can be increased, and the aging can be effectively delayed.

[0039] The composition for baking according to the present application contains two or more enzymes and two or more emulsifiers, and thus may exhibit effects of extending the freshness of dough and/or bread comprising the same, increasing the water retention capacity, delaying the aging, increasing the volume, and increasing the mouthfeel.

[0040] Specifically, the composition for baking according to the present application contains two or more enzymes comprising amylase, specifically alpha-amylase and hemicellulase, and two or more emulsifiers comprising monoglyceride and sodium stearoyl lactylate, and thus may extend the freshness of dough and/or bread, increase the water retention capacity, delay the aging, increase the volume, and increase the mouthfeel.

[0041] The composition for baking of the present application may further comprise one or more gum to prevent the aging of the bread and/or the dough.

[0042] In one embodiment, the composition for baking contains one or more gum together with two emulsifiers and two enzymes, and thus may improve the freezing and unfreezing stability according to the present application and exhibit the effect of increasing the water retention capacity of the dough and the

bread prepared therefrom, extending the freshness, delaying the aging, increasing the volume and improving the mouthfeel.

[0043] The gum can be used without limitation as long as it is a gum that can be added to bread, and for example, may be xanthan gum, agar, locust bean gum, guar gum, tamarind gum, gellan gum, tragacanth gum, gatti gum, etc.

[0044] In one embodiment, the gum may comprise xanthan gum. If the xanthan gum is contained together with the two or more enzymes and two or more emulsifiers, the water absorption and water retention capacity of the bread and/or dough is increased to prevent the aging of the bread and/or dough, and the movement of water is minimized during the freezing and unfreezing process of the bread and/or the dough, which can have the effect of improving the freezing storability.

[0045] The gum, in one embodiment, xanthan gum is for the improvement of the physical properties of the dough and the improvement of the physical properties of the prepared bread, and may be contained, for example, but is not limited to, in the composition for baking in a content of 0.1 to 20 % by weight, 0.5 to 15 % by weight, 1 to 15 % by weight, 5 to 15 % by weight or 8 to 12 % by weight.

[0046] In consideration of the improvement of the effect of maintaining freezing and unfreezing stability according to the present application, in the present application, the total content of the enzyme may be 0.5 to 5 parts by weight, 0.5 to 4.5 parts by weight, 0.5 to 4 parts by weight, 0.5 to 3.5 parts by weight, 0.5 to 3 parts by weight, 1 to 5 parts by weight, 1 to 4.5 parts by weight, 1 to 4 parts by weight, 1 to 3.5 parts by weight, 1 to 3 parts by weight, 1.5 to 2.5 parts by weight, 1.5 to 2 parts by weight or 1.7 to 2 parts by weight, based on 100 parts by weight of the gum. In addition, the total content of the emulsifier may be 50 to 300 parts by weight, 50 to 250 parts by weight, 50 to 200 parts by weight,

60 to 300 parts by weight, 70 to 300 parts by weight, 80 to 300 parts by weight, 85 to 300 parts by weight, 85 to 200 parts by weight, 85 to 190 parts by weight, 85 to 185 parts by weight, 90 to 180 parts by weight, 95 to 175 parts by weight, 100 to 150 parts by weight, 110 to 150 parts by weight, 115 to 140 parts by weight, 120 to 140 parts by weight or 120 to 130 parts by weight, based on 100 parts by weight of the gum.

[0047] The composition for baking according to the present application may be used as a baking improver. The baking improver aims to improve the appearance and mouthfeel of bakery products, extend the shelf-life, control the volume, and improve the qualities such as workability and machinability. The use of the baking improver is not limited thereto, but the baking improver may be a plain bread improver and/or a pastry improver, which means a dedicated improver optimized for preparing a plain bread and/or a pastry bread.

[0048] If bread is prepared by adding the composition for baking according to the present application as a baking improver, the aging of the bread may be suppressed and the freshness may be improved. In addition, the quality can be improved, for example, the volume and the water retention capacity of the bread are increased and the machinability is improved, thereby increasing the production yield.

[0049] The composition for baking of the present application may further comprise an excipient or additive used for the baking improver in addition to the above-described enzyme, emulsifier, and gum.

[0050] The type of the excipient or additive may be used within a range that does not impair the purpose of the present application as long as it is an acceptable excipient or additive for food, and for example, may be at least one selected from the group consisting of agar, pectin, gelatin, gluten, vitamin C, citric acid, lactic acid, vanillin,

inorganic salts, shortening, glucose, calcium carbonate, whey protein (whey powder), canola oil, skimmed soybean flour, wheat flour, calcium sulfate, ammonium chloride, skimmed milk powder, grain powder, shower dough powder, soybean oil, palm oil, maltodextrin, butylhydroxyanisole, dibutyl hydroxy toluene, tert-butylhydroquinone, propionic acid, sodium propionate, calcium propionate and synthetic flavoring agent. Specifically, the excipient or additive may be at least one selected from the group consisting of wheat flour, vitamin C, inorganic salts, calcium carbonate, shortening, glucose, and skimmed soybean flour.

[0051]

[0052] Another aspect of the present application provides a dough for freezing distribution, comprising the composition for baking and wheat flour.

[0053] The wheat flour is not particularly limited as long as it can be used in the preparation of bread, and for example, may be hard wheat flour, soft wheat flour, whole wheat flour, medium wheat flour, and the like.

[0054] The total content of the composition for baking may be 1.5 to 3 parts by weight relative to 100 parts by weight of wheat flour, and specifically, may be 1.7 to 2.7 parts by weight, or 1.7 to 2.5 parts by weight, or 2 to 2.5 parts by weight.

[0055] The total content of the enzyme may be 0.003 parts by weight to 0.006 parts by weight relative to 100 parts by weight of the wheat flour, and specifically, may be 0.004 parts by weight to 0.005 parts by weight.

[0056] The total content of the emulsifier may be 0.1 parts by weight to 0.5 parts by weight relative to 100 parts by weight of the wheat flour, and specifically, may be 0.15 parts by weight to 0.4 parts by weight, 0.2 parts by weight to 0.35 parts by weight, or 0.25 parts by weight to 0.3 parts by

weight.

[0057] The total content of the gum may be 0.1 parts by weight to 0.5 parts by weight relative to 100 parts by weight of the wheat flour, and specifically, may be 0.15 parts by weight to 0.4 parts by weight, 0.2 parts by weight to 0.35 parts by weight, or 0.25 parts by weight to 0.3 parts by weight.

[0058] By incorporating the enzyme, emulsifier and gum in the above content range, the softness and volume of the prepared bread are increased, and the aging can be effectively delayed.

[0059] The dough for freezing distribution may further comprise butter, yeast, water, etc. within the range not departing from the effects of the present application, in addition to the enzyme, emulsifier, and gum, as long as they can be used in the preparation of bread.

[0060] The butter may be contained, for example, but is not limited to, in a content of 20 parts by weight to 70 parts by weight, 30 parts by weight to 60 parts by weight, 35 parts by weight to 60 parts by weight, 35 parts by weight to 55 parts by weight, 40 parts by weight to 50 parts by weight, 42 parts by weight to 49 parts by weight, 44 parts by weight to 48 parts by weight, or 45 parts by weight to 47 parts by weight, relative to 100 parts by weight of the wheat flour.

[0061] The yeast may be contained, for example, but is not limited to, in a content of 1 part by weight to 5 parts by weight, 1 part by weight to 4 parts by weight, 1.5 parts by weight to 3.5 parts by weight, 2 parts by weight to 3 parts by weight, 2.2 parts by weight to 2.8 parts by weight, or 2.3 parts by weight to 2.6 parts by weight, relative to 100 parts by weight of the wheat flour.

[0062] The water may be contained, for example, but is not limited to, in a content of 20 parts by weight to 70 parts by weight, 30 parts by weight to 60 parts by weight, 35 parts by

weight to 60 parts by weight, 35 parts by weight to 58 parts by weight, 40 parts by weight to 57 parts by weight, 42 parts by weight to 55 parts by weight, 45 parts by weight to 53 parts by weight, or 47 parts by weight to 51 parts by weight, relative to 100 parts by weight of the wheat flour.

[0063] The dough for freezing distribution may be distributed in a frozen state or may be distributed in a non-frozen state.

[0064]

[0065] Another aspect of the present application provides a bread for freezing distribution prepared from the dough for freezing distribution.

[0066] The bread for freezing distribution may refer to a bread prepared according to a conventional method after unfreezing the frozen dough according to the present application. In addition, it may refer to a bread that has been frozen and stored after preparing by a conventional method using the dough before freezing according to the present application. In addition, it may refer to a re-frozen bread which is prepared after unfreezing the frozen dough according to the present application.

[0067] The bread for the freezing distribution can be prepared according to a method comprising any one or more of a mixing step of the enzyme, emulsifier and gum and wheat flour; a kneading step; a forming step; a fermentation step; a heating step; and a freezing step.

[0068] In the mixing step, raw materials of the dough, such as wheat flour, enzyme, emulsifier, gum, etc. may be added sequentially in any order or simultaneously and then mixed. Alternatively, the raw materials of the dough may be added sequentially in any order or simultaneously to the mixer while stirring and mixed.

[0069] The kneading step refers to the step of preparing the dough by mixing the raw materials containing wheat flour.

[0070] The forming step refers to a step of dividing the dough into a predetermined shape.

[0071] The fermentation step refers to a step of fermenting the dough to expand the dough. The fermentation may be performed, for example, at a temperature of 30 to 40 °C, a relative humidity of 70 to 90% and/or for a period of 50 to 70 minutes. For example, for plain bread, the fermentation may be performed at a temperature of 38 °C, a relative humidity of 85% and/or a period of 60 minutes, and for pastry, it may be performed at a temperature of 30 °C, a relative humidity of 75% and/or a period of 60 minutes.

[0072] The heating step means a step of baking in an oven or the like, and for example, may be performed at a temperature of 100 °C to 250 °C, and/or for 10 to 20 minutes.

[0073] The freezing step refers to a freezing step for distribution, which may be rapid freezing, and for example, it may be performed for 30 minutes at a temperature of -38 °C or less.

[0074]

[0075] Another aspect of the present application provides a method for maintaining the freezing and unfreezing stability of the dough or bread for freezing distribution, comprising a step of storing the dough which contains two or more enzymes, two or more emulsifiers and wheat flour, or the bread prepared therefrom under freezing conditions.

[0076] Another aspect of the present application provides a method for maintaining the freezing and unfreezing stability of the dough or bread for freezing distribution, comprising a step of storing the dough which contains two or more enzymes, two or more emulsifiers, one or more gums and wheat flour, or

the bread prepared therefrom under freezing conditions.

[0077] The description of the enzyme, the emulsifier, the gum and the composition of the bread for freezing distribution is the same as described above.

[0078] The 'freezing condition' for storing the dough or bread prepared therefrom refers to a condition that meets the market distribution conditions of the frozen dough or frozen bread, and for example, may comprise a temperature condition of -10 °C or less, specifically -20 °C to -15 °C. In addition, the method according to the present application may excellently maintain the freezing and unfreezing stability even when stored for up to 12 months at the above-described temperature, such as for 1 month to 9 months, specifically for 1 month to 3 months.

[0079]

【Advantageous Effects】

[0080] The composition for baking of this application can extend the freshness of the bread and/or the dough for freezing distribution in the freezing distribution process, and/or in particular, has an effect of maintaining the stability of the freezing and unfreezing process of the bread and/or the dough.

[0081] The composition for baking of the present application can maintain the freshness by increasing the water retention capacity and delaying aging in the dough for freezing distribution to which it is added, as compared to the dough for freezing distribution without the composition and the dough for freezing distribution distributed in the market.

[0082] In addition, the composition for baking of the present application increases the volume during baking in the dough for freezing distribution to which it is added, and has an

effect of improving an external crispy mouthfeel and an internal moist mouthfeel of the finished bread, as compared to the dough for freezing distribution without the composition and the dough for freezing distribution distributed in the market.

[0083] However, the effects of the present application are not limited to the above-mentioned effects, and other effects which are not mentioned will be clearly understood by those skilled in the art from the following description.

【Description of Drawings】

[0084] FIG. 1a is a photograph of the frozen dough for the preparation of the pastry bread of Preparation Example 1.

[0085] FIG. 1b is a view of the whole and cross-section of pastry breads of Preparation Example 1, Comparative Preparation Example 1-1 and Comparative Preparation Example 1-2.

[0086] FIG. 2 is a graph showing the result of calculating the specific volume of pastry breads of Preparation Example 1, Comparative Preparation Example 1-1, and Comparative Preparation Example 1-2.

[0087] FIG. 3 is a graph showing the results of sensory evaluation of pastry breads of Preparation Example 1 and Comparative Preparation Example 1-2.

[0088] FIG. 4 are photographs of whole and cross-section of plain breads of Preparation Example 2, Comparative Preparation Example 2-1, and Comparative Preparation Example 2-2.

[0089] FIG. 5 is a graph showing the results of evaluation of the water retention capacity of plain breads of Preparation Example 2, Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2 before and after storage for 4 days.

[0090] FIG. 6 is a graph showing the results of evaluation of the hardness of plain breads of Preparation Example 2,

Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2 before and after storage for 4 days.

[0091] FIG. 7 is a photograph of the frozen dough for pastry bread prepared by adding the composition for baking according to an Example of the present application as a pastry improver.

[0092] FIG. 8 is a photograph of the inner surface of the bulgogi bake baked after unfreezing the frozen dough for the pastry bread prepared by adding the composition for baking according to an Example of the present application as a pastry improver.

[0093] FIG. 9 is a photograph (top) of the finished product of the chicken bake baked after unfreezing the frozen dough for pastry bread prepared by adding the composition for baking according to an Example of the present application as a pastry improver, and a photograph (bottom) of the inner surface after cutting the finished product.

[0094]

【Mode for Carrying out the Invention】

[0095] Hereinafter, the present application will be described in detail by experimental examples.

[0096] However, the following experimental examples specifically exemplify the present application, and the content of the present application is not limited by the following examples.

[0097]

[0098] Example 1. Preparation of composition for baking

[0099] A composition for baking (Example 1) was prepared by mixing the enzymes, the emulsifiers, the gum and the other excipients. The composition of the enzyme, the emulsifier and the gum in the composition for baking is shown in Table 1 below. α -amylase and hemicellulase were used as the enzymes, monoglyceride and sodium stearyl lactylate were used as the

emulsifiers, and xanthan gum was used as the gum.

[0100] Table 1:

Item	Component	Content (% by weight)
Enzyme	α -amylase	0.016 ~ 0.020
	hemicellulase	0.16 ~ 0.20
Emulsifier	monoglyceride	8 ~ 11
	SSL (sodium stearyl lactylate)	2.8 ~ 3.4
Gum	xanthan gum	8 ~ 12

[0101]

[0102] **[Preparation Example] Preparation of bread**

[0103] A dough for pastry bread and a dough for plain bread were prepared using the composition for baking of Example 1 prepared above as a baking improver according to the formulations of Tables 2 and 3 below, respectively. The prepared dough was rapidly frozen at -38 °C for 30 minutes, and after 8 weeks of freezing at -18 °C or lower, the frozen dough was unfrozen to prepare pastry bread (Preparation Example 1) and plain bread (Preparation Example 2) according to the standard recipe of bread.

[0104] In addition, as Comparative Preparation Examples, a pastry bread (Comparative Preparation Example 1-1) and a plain bread (Comparative Preparation Example 2-1) without using a baking improver were prepared, and a pastry bread (Preparation Example 1-2) and a plain bread (Comparative Preparation Example 2-2) were prepared using a commercially available global baking improver (Puratos Korea company, S-kimo 500). The breads of Comparative Preparation Example 1-1 and Comparative Preparation Example 2-1 were also prepared according to the same method by freezing and unfreezing the dough prepared as in the breads of Preparation Examples 1 and 2 under the same conditions.

[0105] The combination of dough for the production of pastry

bread is shown in Table 2 below, and the combination of dough for the production of plain bread is shown in Table 3 below.

[0106] Table 2:

Component (part)	Combination ratio	Preparation Example 1	Comparative Preparation Example 1-1	Comparative Preparation Example 1-2
Wheat flour	43.0	430	430	430
Yeast	1.0	10	10	10
Salt	1.0	10	10	10
Sugar	5.0	50	50	50
Butter	22.0	220	220	220
Whey powder	1.5	15	15	15
Glucose	1.0	10	10	10
Gluten	0.5	5	5	5
Water	25.0	250	250	250
Example 1	1.0	10	-	-
S-kimo 500 ¹⁾	1.0	-	-	10
Content in total		1010	1000	1010

[0107]

[0108] Table 3:

Component (part)	Combination ratio	Preparation Example 2	Comparative Preparation Example 2-1	Comparative Preparation Example 2-2
Wheat flour	58.0	580	580	580
Yeast	1.0	10	10	10
Salt	1.0	10	10	10
Sugar	3.0	30	30	30
Butter	2.0	20	20	20
Water	35.0	350	350	350
Example 1	1.0	10	-	-
S-kimo 500 ¹⁾	1.0	-	-	10
Content in total		1010	1000	1010

[0109] 1) S-kimo 500 (Puratos Korea company) component: wheat

flour, glucose, glycerin fatty acid ester, calcium carbonate, vitamin C, alpha amylase (non-bacterial), hemicellulase, whey protein, canola oil

[0110]

[0111] The photograph of the frozen dough for the preparation of pastry bread of Preparation Example 1 prepared as above is shown in FIG. 1a, the whole photograph and cross-sectional photograph of the pastry breads of Preparation Example 1, Comparative Preparation Example 1-1 and Comparative Preparation Example 1-2 are shown in FIG. 1b, and the whole photograph and cross-sectional photograph of the plain breads of Preparation Example 2, Comparative Preparation Example 2-1, and Comparative Preparation Example 2-2 prepared as described above are shown in FIG. 4.

[0112]

[0113] **Experimental Example 1. Comparative evaluation of specific volume of pastry bread**

[0114] The specific volume was calculated using the weight and volume of the breads of Preparation Example 1, Comparative Preparation Example 1-1, and Comparative Preparation Example 1-2.

[0115] Specifically, the prepared bread was left at room temperature for 90 minutes and then cooled until the internal temperature of the bread was 25 °C or less, and thereafter, the weight is measured using a scale (CUX6200H, USA), and the volume was measured using a volume scanner (VolScan Profiler, Stable Micro Systems, England).

[0116] The specific volume was calculated as a volume (mL)/weight (g) value, and the results are shown in Table 4 and FIG. 2 below.

[0117] Table 4:

Item	Preparation Example 1	Comparative Preparation Example 1-1	Comparative Preparation Example 1-2
Specific volume (ml/g)	3.64	2.72	3.30
Volume scanner (ml)	182.000	136.000	165.000

[0118]

[0119] According to the results of Table 4 and FIG. 2, it was confirmed that the specific volume of the pastry according to Preparation Example 1 was higher than those of Comparative Preparation Example 1-1 and Comparative Preparation Example 1-2. Specifically, it was confirmed that the specific volume of the pastry according to Preparation Example 1 was increased by 30% or more as compared to Comparative Preparation Example 1-1 and by 10% or more as compared to Comparative Preparation Example 1-2.

[0120] As a result, it was confirmed that when the composition for baking of the present application is contained in the dough, the volume of the prepared bread after unfreezing is excellent even though the prepared dough was frozen and stored for 8 weeks.

[0121]

[0122] **Experimental Example 2. Sensory evaluation of pastry bread**

[0123] The evaluation of sensory properties was performed on the breads of Preparation Example 1 and Comparative Preparation Example 1-2 according to the Sensory Consumer Test (SCT).

[0124] The evaluation was performed on 55 housewives between the ages of 25 and 49 by the Blind Label Test. For the evaluation of the appearance of the bread, one uncut round pastry bread is provided to each table, and for evaluation of the detailed characteristics of the bread (moisture inside,

crispy outside), one pastry bread was cut and provided to each table for 2 people. The evaluation was performed on a 9-point scale, which was converted into a 5-point scale, and the results are shown in Table 5 and FIG. 3 below.

[0125] Table 5:

Item	Whole preference	Whole appearance preference	Color preference	Inside moistness preference	Outside crispy preference
Preparation Example 1	3.65	3.51	3.60	3.68	3.58
Comparative Preparation Example 1-2	3.40	3.05	2.91	3.50	3.54

[0126] (n=55)

[0127] According to the results of Table 5 and FIG. 3, it was confirmed that the sensory properties of Preparation Example 1 were superior to those of Comparative Preparation Example 1-2 using a commercially available baking improver. Through this, it was confirmed that the freezing and unfreezing stability of the dough using the baking improver of Example 1 according to the present application is improved, and thus the appearance preference and the preference of moist mouthfeel of the bread of Preparation Example 1 are improved.

[0128]

[0129] **Experimental Example 3. Comparative evaluation of water retention capacity of plain bread**

[0130] The water retention capacity of the plain bread of Preparation Example 2, Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2 was measured and evaluated by comparison. The water retention capacity of the bread was evaluated by leaving the bread at room temperature for 90 minutes, cooling it until the inside temperature of the bread is 25°C or less, taking a sliced sample and pulverizing it, and

then heating and drying the bread at 105°C for 20 hours by an atmospheric pressure drying method and measuring the reduced weight of the bread. The amount of moisture change for 4 days after the preparation of bread was measured, and the results are shown in Table 6 and FIG. 5.

[0131] Table 6:

Item (water content (%))	Preparation Example 2	Comparative Preparation Example 2-1	Comparative Preparation Example 2-2
1 st day	43.8	41.9	42.8
4 th day	42.5	40.1	41.2
Reduction amount	1.3	1.8	1.6
Reduction rate	2.9%	4.2%	3.7%

[0132]

[0133] According to the results of table 6 and FIG. 5, it was confirmed that the initial water content of Preparation Example 2 is higher than Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2, which indicates more moist state. In addition, it was confirmed that in the case of Preparation Example 2, after storing the prepared bread for 4 days, the amount of moisture reduction amount is lowered, and the effect of maintaining a fresh mouthfeel is excellent, and thus the freshness of the bread can be improved during the distribution of bread.

[0134]

[0135] **Experimental Example 4. Comparative evaluation of the aging (hardness) of plain bread**

[0136] In order to compare the aging, freshness, and mouthfeel of Preparation Example 2, Comparative Preparation Example 2-1, and Comparative Preparation Example 2-2, the comparative evaluation of hardness was performed.

[0137] Specifically, the prepared bread was left at room

temperature for 90 minutes and then cooled until the internal temperature of the bread was 25 °C or less. Thereafter, a TPA test was performed to measure hardness, springiness, cohesiveness, chewiness, and resilience from the force-curve that appeared when a sliced sample was taken and P/25 (25 mm Dia Cylinder Aluminium) was installed using a physical property analyzer (Texture Analyzer, TA, Xtplus, Stable Micro Systems, England) and the sample was infiltrated twice in a row. The change in hardness for 4 days after the preparation of bread was measured, and the results are shown in Table 7 and FIG. 6 below.

[0138] Table 7:

Item	Preparation Example 2	Comparative Preparation Example 2-1	Comparative Preparation Example 2-2
1 st day	262.6	389.6	309.4
4 th day	303.6	496.8	363.8
Increase amount	41.1	107.2	54.4
Increase rate	15.6%	27.5%	17.6%

[0139]

[0140] According to the results of Table 7 and FIG. 6, it was confirmed that the initial hardness of Preparation Example 2 was lower than Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2, which indicates a softer mouthfeel. In addition, it was confirmed that in the case of Preparation Example 2, after storing for 4 days, the change in hardness is the lowest, and thus the aging of the bread is delayed compared to Comparative Preparation Example 2-1 and Comparative Preparation Example 2-2, and thus the storage stability and the freshness during distribution can be excellently maintained.

[0141]

[0142] In the above, representative experimental examples of the present application have been exemplarily described. However, the scope of the present application is not limited to the specific experimental examples as described above, and those skilled in the art will be able to appropriately change them within the scope described in the claims of the present application.

【CLAIMS】

【Claim 1】 A composition for baking, comprising two or more enzymes and two or more emulsifiers,

wherein the two or more enzymes comprise amylase and hemicellulose,

wherein the two or more emulsifiers comprise monoglyceride and sodium stearoyl lactylate,

wherein the monoglyceride and sodium stearoyl lactylate are contained in a weight ratio of 1:0.1 to 1:0.8,

wherein the composition further comprises one or more gums,

wherein the total content of the enzyme is 0.5 to 5 parts by weight, based on 100 parts by weight of the gum.

【Claim 2】 The composition for baking according to claim 1, wherein the amylase and hemicellulase are contained in a weight ratio of 1:5 to 1:15.

【Claim 3】 The composition for baking according to claim 1, wherein the one or more gums comprise xanthan gum.

【Claim 4】 The composition for baking according to claim 1, wherein the total content of the emulsifier is 50 to 300 parts by weight, based on 100 parts by weight of the gum.

【Claim 5】 A dough for freezing distribution comprising the composition for baking according to any one of claims 1 or 2 and wheat flour.

【Claim 6】 The dough for freezing distribution according to claim 5, wherein the enzyme is contained in a content of 0.003

parts by weight to 0.006 parts by weight relative to 100 parts by weight of the wheat flour.

【Claim 7】 The dough for freezing distribution according to claim 5, wherein the emulsifier is included in a content of 0.1 parts by weight to 0.5 parts by weight relative to 100 parts by weight of the wheat flour.

【Claim 8】 A dough for freezing distribution comprising the composition for baking according to any one of claims 3 or 4 and wheat flour.

【Claim 9】 The dough for freezing distribution according to claim 8, wherein the gum is contained in a content of 0.1 parts by weight to 0.5 parts by weight relative to 100 parts by weight of the wheat flour.

【Claim 10】 A bread for freezing distribution which is prepared with the dough for freezing distribution according to claim 5.

【Claim 11】 A bread for freezing distribution which is prepared with the dough for freezing distribution according to claim 8.

【Claim 12】 A method for maintaining the freezing and unfreezing stability of a dough or bread for freezing distribution, comprising a step of storing the dough which contains two or more enzymes, two or more emulsifiers and wheat flour, or the bread prepared therefrom under freezing conditions,

wherein the two or more enzymes comprise amylase and hemicellulose,

wherein the two or more emulsifiers comprise monoglyceride and sodium stearoyl lactylate,

wherein the monoglyceride and sodium stearyl lactylate are contained in a weight ratio of 1:0.1 to 1:0.8,
wherein the dough further comprises one or more gums,
wherein the total content of the enzyme is 0.5 to 5 parts by weight, based on 100 parts by weight of the gum.