

The effect of fresh, frozen and dehydrated eggs on  
sponge cake quality

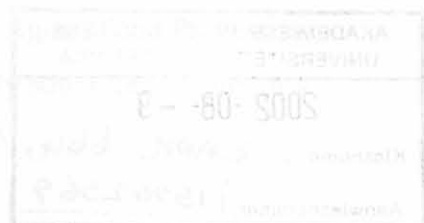
by

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I declare the dissertation herewith submitted for the MInst Agrar (Food Processing) degree at the University of Pretoria, has not been previously submitted by me for a degree at any other University.

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## ABSTRACT

### THE EFFECT OF FRESH, FROZEN AND DEHYDRATED EGGS ON SPONGE CAKE QUALITY

BY

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Eggs are one of the major ingredients for sponge cake baking. The major functional properties of eggs such as coagulating, foaming, emulsifying, colour and flavour may have changed during processing and storage. Once the functional properties change, the baking potential for sponge cake also changes. The major objective of this study was to compare if different forms of egg (fresh shell egg, frozen egg pulp, spray-dried egg powder and a commercial egg powder mixture) would affect the baking volume, sensory characteristics and shelf-life of sponge cakes.

Proximate composition analysis, pH, foaming overrun, coagulation temperature and water-holding capacity of egg samples were determined. Index to volume, specific volume, water activity, yeast and mould counts, texture analysis and sensory properties of sponge cake samples were determined. Spray-dried egg powder sponge cake samples had the best baking volume whereas frozen egg pulp and egg powder mixture sponge cake samples had the lowest baking volume. All sponge cake samples were stored at 21°C and 31°C for shelf-life tests. Egg powder mixture sponge cake samples had the longest microbiological shelf-life. No significant differences were found in physical changes for sponge cakes which were stored at 21°C and 31°C. The sensory properties (browness of the crust, yellowness of the

crumb, presence of black specks, egg smell, caramel smell, baking powder smell, stickiness of the crust, moistness of crumb, sponginess, rubberiness, sweetness, egg flavour, after taste and baking powder flavour) of various samples were different.

## TABLE OF CONTENTS

Considering the objective of this study, it can be concluded that spray-dried whole egg powder with emulsifier added can replace fresh and frozen whole egg products in the baking industry whereas the commercial egg powder mixture cannot.

1.1	Problem statement	1
1.2	Objectives	1
1.3	Significance	1
1.4	Scope	1
1.5	Delimitation	1
1.6	Definition of terms	1
2	CHAPTER 2: LITERATURE REVIEW	2
2.1	2.1.1 Egg composition	2
2.2	2.1.2 Chemical composition	2
2.3	2.1.3 Egg processing	2
2.4	2.1.4 Staling	2
2.5	2.1.5 Homogenisation	2
2.6	2.1.6 Pasteurisation	2
2.7	2.1.7 Frozen	2
2.8	2.1.8 Spray-dried	2
2.9	2.1.9 Emulsifier	2
2.10	2.1.10 Functional properties	2
2.11	2.1.11 Fatigue	2
2.12	2.1.12 Crystallisation	2
2.13	2.1.13 Colour and taste	2
2.14	2.1.14 Functional properties change of components	2
2.15	2.1.15 Heat Treatment	2
2.16	2.1.16 Freezing	2
2.17	2.1.17 Dehydration	2
2.18	2.1.18 Special cake	2
2.19	2.1.19 Microbiology	2
2.20	2.2 1.1.18 Strategies	2
2.21	2.2 1.2.2 Sponge Cake	2
2.22	2.2.3 Sensory evaluation	2

## TABLE OF CONTENTS

ACKNOWLEDGEMENTS .....	i
ABSTRACT .....	ii
TABLE OF CONTENTS .....	iv
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
CHAPTER 1:INTRODUCTION .....	1
1.1 Problem statement.....	3
CHAPTER 2:LITERATURE REVIEW.....	4
2.1 Egg composition .....	4
2.2 Chemical composition.....	5
2.3 Egg processing.....	6
2.3.1 Breaking.....	7
2.3.2 Homogenisation .....	7
2.3.3 Pasteurisation .....	8
2.3.4 Freezing .....	8
2.3.5 Dehydration .....	9
2.3.6 Storage.....	10
2.4 Functional properties.....	11
2.4.1 Foaming.....	12
2.4.2 Coagulation .....	16
2.4.3 Colour and flavour .....	18
2.5 Functional property changes due to processing.....	18
2.5.1 Heat Treatment.....	19
2.5.2 Freezing .....	19
2.5.3 Dehydration .....	21
2.6 Sponge cake.....	23
2.7 Microbiology .....	24
2.7.1 Fresh eggs .....	24
2.7.2 Sponge Cake .....	25
2.8 Sensory evaluation.....	26

<b>CHAPTER 3:OBJECTIVES &amp; HYPOTHESES .....</b>	<b>27</b>
3.1 Objectives.....	27
3.2 Hypotheses .....	27
<b>CHAPTER 4:MATERIALS &amp; METHODS.....</b>	<b>29</b>
4.1 Experimental Design.....	29
4.2 Materials.....	31
4.2.1 Baking materials .....	31
4.3 Methods.....	32
4.3.1 Phase 1 (Analyses of egg samples).....	32
4.3.1.1 Proximate analysis of egg ingredients.....	32
4.3.1.1.1 Moisture content.....	32
4.3.1.1.2 Protein content .....	33
4.3.1.1.3 Fat content.....	33
4.3.1.1.4 Ash content .....	34
4.3.1.2 pH.....	34
4.3.1.3 Foaming overrun.....	34
4.3.1.4 Coagulating temperature .....	35
4.3.1.5 Water-holding capacity (WHC).....	35
4.3.2 Phase 2 (Baking & analyses of sponge cakes) .....	36
4.3.2.1 Reconstitution formula .....	36
4.3.2.2 Baking method.....	38
4.3.2.3 Specific volume .....	39
4.3.2.4 Index to volume .....	39
4.3.2.5 Water activity.....	40
4.3.2.6 Yeast and mould counts .....	40
4.3.2.7 Texture analysis .....	41
4.3.2.8 Sensory evaluation .....	42
4.3.2.8.1 Screening test .....	42
4.3.2.8.2 Training.....	42
4.3.2.8.3 Testing period .....	44
4.4 Statistical analysis of data.....	44

<b>CHAPTER 5:RESULTS .....</b>	<b>47</b>
5.1 Phase 1 .....	47
5.1.1 Proximate composition of egg samples.....	47
5.1.2 pH.....	49
5.1.3 Foaming overrun of egg samples.....	49
5.1.4 Coagulation temperature .....	51
5.1.5 Water-holding capacity .....	51
5.2 Phase 2 .....	53
5.2.1 Baking volume.....	53
5.2.2 Water activity .....	54
5.2.3 Yeast and mould counts .....	54
5.2.4 Texture analysis .....	55
5.2.5 Sensory evaluation .....	57
<b>CHAPTER 6:DISCUSSION.....</b>	<b>64</b>
6.1 Baking potential of fresh shell eggs, frozen egg pulp, spray-dried egg powder and the egg powder mixture .....	64
6.2 Baking performance.....	68
6.3 Sensory characteristic and shelf-life as affected by storage temperature and period .....	70
<b>CHAPTER 7:CONCLUSIONS &amp; RECOMMENDATIONS .....</b>	<b>75</b>
<b>CHAPTER 8:REFERENCES .....</b>	<b>77</b>



## LIST OF TABLES

Table 1	Proximate composition of fresh whole egg, frozen whole egg and whole egg powder on dry base .....	5
Table 2	Calculation of egg % and water % to be added in baking formula .....	37
Table 3	The baking formulas for sponge cakes with fresh shell egg, frozen egg pulp and dried egg powder .....	37
Table 4	Proximate compositions (dry basis and [wet basis]) of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples .....	48
Table 5	pH of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples .....	49
Table 6	Coagulation temperatures of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples .....	51
Table 7	The effect of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture on specific volume 1 and index-to-volume of sponge cake samples .....	53
Table 8	The effect of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture on water activity of sponge cake samples.....	54
Table 9	Yeast and mould counts (cfu/g) of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples.....	55

## LIST OF FIGURES

Figure 1	Schematic drawing of internal structure of hen's egg .....	4
Figure 2	The manufacturing process of whole egg products .....	6
Figure 3	Arrangement for mechanically separating albumen and yolk .....	7
Figure 4	Schematic diagram of spray-drying system.....	9
Figure 5	The structure of foam bubbles .....	13
Figure 6	The measurements of Phase 1 to characterize the fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples .....	30
Figure 7	Activities during Phase 2 to characterize the sponge cakes baked from fresh shell egg, frozen egg pulp, spray-dried egg powder or egg powder mixture.....	30
Figure 8	The method used for sponge cake manufacturing .....	38
Figure 9	Diagram to show the testing area of samples for texture analysis .....	41
Figure 10	The definitions of sponge cake used for the sensory evaluation .....	43
Figure 11	The sensory evaluation form for sponge cake samples.....	45
Figure 12	Percentage foaming overrun of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples .....	50
Figure 13	Water-holding capacity of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture samples.....	52
Figure 14	Texture analysis of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples stored from Day 0 to Day 24 .....	56
Figure 15	Average ratings of appearance characteristics of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples as assessed by a trained sensory panel.....	58
Figure 16	Average ratings of aroma characteristics of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples as assessed by a trained sensory panel.....	59

Figure 17 Average ratings of texture characteristics of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples as assessed by a trained sensory panel.....60

Figure 18 Average ratings of rubberiness for fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples as assessed by a trained sensory panel..... 61

Figure 19 Average ratings of flavour characteristics of fresh shell egg, frozen egg pulp, spray-dried egg powder and egg powder mixture sponge cake samples as assessed by a trained sensory panel.....62

Figure 20 Schematic illustration of a change in gel structure due to local well as pH aggregation phenomena.....65