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Egg White Foam

**A thesis presented in partial fulfilment of the requirements
for the degree of Master of Food Technology
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Abstract

Egg white is extensively utilized as a functional food material in food processing due to the multiple functional roles of egg white proteins such as foaming, gelling and emulsifying properties. The foaming property of egg white has been widely studied using different methods. In this research, two different foaming methods were used to prepare egg white foams by a whipping method using a standard mix beater and a sparging method using a whipped cream dispenser (pressurized dispenser). Egg white is also commercially available in several different physical forms, such as fresh egg white liquid, frozen fresh egg white liquid (EWL) and spray dried egg white powder (EWP). In this study, EWL and EWP solutions were used to compare their foaming ability and foam stability. Various factors affecting on the formation and stability of egg white foam were investigated to understand their impact on the functional properties of egg white as foaming agents under specific conditions, including whipping time and speed, shaking time, temperature, pH, type and ionic strength of salts, thermal treatment and addition of some ingredients (e.g. sugar and hydrocolloids). All foams produced were analysed on the basis of two different parameters of foam properties, such as foamability after preparation and foam stability with time after foam preparation. Foam stability was also analysed by two different aspects, foam volume stability against foam collapse and foam liquid stability against liquid drainage. Another objective of this study was to investigate the application of cooking egg white foam in a microwave oven after the foam preparation with an aim of developing a prototype of value added new products derived from egg white foam. The microbiological stability of egg white was also measured to determine the shelf stability of non-pasteurised and pasteurised egg white solutions with and without added ingredients against microbial growth. Overall the results obtained in this study provide significant insights into the impact of various factors affecting the formation and stability of egg white foam and the potential application of microwave cooking of egg white foam for applications in various food industries.

Keywords: Egg white foam, foamability, foam stability, whipped cream dispenser, microwave oven, microbial stability

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Table of Contents

ABSTRACT	I
ACKNOWLEDGEMENTS.....	II
LIST OF FIGURES	VII
LIST OF TABLES	XII
LIST OF APPENDICES	XIV
CHAPTER 1 INTRODUCTION	1
CHAPTER 2 LITERATURE REVIEW	4
2.1 Nutritional composition of eggs	4
2.2 Nutritional value of egg proteins	5
2.3 Digestibility and quality of egg proteins	7
2.4 Microbial safety	9
2.5 Pasteurisation of egg	10
2.5.1 Pasteurisation methods of egg white	12
2.6 Structure and composition of egg	13
2.6.1 Egg shell	13
2.6.2 Egg yolk	14
2.6.3 Egg white.....	15
2.7 Physicochemical properties of egg white proteins.....	15
2.7.1 Major egg white proteins.....	16
2.7.2 Minor albumen proteins	18
2.8 Applications of egg components.....	20
2.8.1 Food and non-food applications of eggs	20
2.8.2 Food safety applications of egg white proteins	21
2.9 Functional properties of egg white	21
2.9.1 Coagulation (gelation) property	21
2.9.2 Emulsification property	23
2.9.3 Foaming ability.....	25
2.10 Egg white foam	27
2.10.1 Foam structure	28

2.10.2	Foam production methods	29
2.10.3	Foam characterization	30
2.10.4	Foam collapse	33
2.10.5	Foam stabilisation.....	34
2.11	Factors affecting the properties of egg white foam	35
2.11.1	Protein concentration.....	35
2.11.2	Whipping time	36
2.11.3	pH and isoelectric point.....	37
2.11.4	Addition of hydrocolloids	39
2.11.5	Addition of sucrose.....	41
2.11.6	Salt (ions) and ionic strength.....	42
2.11.7	Metallic cations	43
2.11.8	Small molecule surfactants.....	43
2.11.9	Heat treatment	45
2.11.10	High pressure treatment.....	46
2.12	Preparation of aerated foods.....	48
2.13	Literature review conclusions	49
CHAPTER 3 FORMATION AND PROPERTIES OF EGG WHITE FOAMS PREPARED BY USING A STANDARD MIX BEATER.....		51
3.1	Introduction	51
3.2	Materials and Methods	52
3.2.1	Materials	52
3.2.2	Preparation of EWL and EWP solutions.....	53
3.2.3	Preparation of foams	53
3.2.4	Analysis of foamability and foam stability	53
3.2.5	Effects of various factors on egg white foam.....	54
3.2.6	Effects of some ingredients on egg white foam	56
3.2.7	Analyses of viscosity, turbidity and zeta potential of EWL.....	58
3.2.8	Statistical data analysis.....	60
3.3	Results and Discussion.....	60
3.3.1	Whipping time	60
3.3.2	Whipping speed	64
3.3.3	Temperature studies using egg white liquid.....	66
3.3.4	Spray-dried egg white powder	69
3.3.5	Egg white protein concentration using egg white powder	71
3.3.6	Effect of pH of egg white liquid.....	74
3.3.7	Addition of salt to egg white liquid solutions	79
3.3.8	Addition of sucrose to egg white liquid solutions	85

3.3.9 Addition of hydrocolloids to egg white liquid solutions.....	87
3.3 Conclusions	91
CHAPTER 4 FORMATION AND CHARACTERISATION OF EGG WHITE FOAMS PRODUCED BY SPARGING METHOD USING A WHIPPED CREAM DISPENSER	93
4.1 Introduction.....	93
4.2 Materials and Methods.....	94
4.2.1 Preparation of egg white foams.....	94
4.2.2 Analysis of foamability and foam stability	95
4.2.3 Effects of several factors on foamability and foam stability.....	95
4.2.4 Effect of sucrose and hydrocolloids	96
4.2.5 Heat treatment of egg white liquid (EWL).....	97
4.2.6 Heat treatment of EWL containing hydrocolloids and sucrose.....	99
4.2.7 Statistical analysis of data	99
4.3 Results and Discussion.....	100
4.3.1 Shaking time for egg white powder solution.....	100
4.3.2 Effect of volume of egg white powder (EWP) solution	102
4.3.3 Types of egg white raw materials (EWL & EWP).....	106
4.3.4 Effect of temperatures of egg white powder solutions (4 and 20°C)	108
4.3.5 Addition of sucrose at different concentrations	110
4.3.6. Addition of hydrocolloids	114
4.3.7 Heat treatment of egg white liquid (EWL).....	117
4.3.8 Heat treatment of EWL solutions containing hydrocolloids and sucrose	122
4.3 Conclusions.....	127
CHAPTER 5 MICROWAVE COOKING OF EGG WHITE FOAMS.....	129
5.1 Introduction.....	129
5.2 Materials and Methods.....	130
5.2.1 Sample preparation and microwave cooking	130
5.2.2 Analysis of foamability and foam stability	130
5.2.3 Effects of some factors on egg white foam after microwave cooking	131
5.2.4 Statistical data analysis.....	134
5.3 Results and Discussion.....	134
5.3.1 Microwave cooking time.....	134
5.3.2 Types and concentration of egg white (EWL and EWP solutions).....	139
5.3.3 Effect of heat treatment on EWL before foam preparation.....	143

5.3.4 Addition of single ingredient to EWL.....	145
5.3.5 Addition of mixtures of different ingredients to EWL.....	147
5.3.6 Heat treatment of EWL solution with ingredients before foaming	150
5.4 Conclusions	153
CHAPTER 6 MICROBIAL STABILITY OF EGG WHITE LIQUID	155
6.1 Introduction.....	155
6.2 Materials and Methods	156
6.2.1 Sample preparation.....	156
6.2.2 Analysis of microbial growth.....	156
6.2.3 Counting colonies.....	157
6.3 Results and Discussion.....	157
6.3.1 Non-heat treated EWL solutions	157
6.3.2 Heat treated EWL solutions.....	159
6.4 Conclusions	160
CHAPTER 7 OVERALL CONCLUSIONS AND RECOMMENDATIONS	161
REFERENCES.....	165
APPENDICES	172

List of Figures

Figure 2.1 Structure of egg.....	13
Figure 2.2 Foam structure,	28
Figure 2.3 Typical foam collapses versus time during and after formation.....	33
Figure 2.4 Effect of electrical net charge of protein molecules at pH below or above pI on protein interactions.	38
Figure 3.1 Pictures of egg whites in two different forms. (A) Frozen pasteurized egg white liquid (10% w/v protein) after thawing at 4oC and (B) spray dried egg white powder (90.04% protein in dry basis).....	52
Figure 3.2 Effect of whipping time on the foamability of egg white liquid prepared using a standard mixer.	61
Figure 3.3 Stability of (A) foam volume and (B) foam liquid from foams produced by whipping liquid egg white for different times.	63
Figure 3.4 Foamability of liquid egg white produced by whipping at two different speeds using a standard mixer.	65
Figure 3.5 Stability of egg white foams with time after whipping at two different speed levels (speed 3 and 5); (A) foam volume stability and (B) foam liquid stability. ...	66
Figure 3.6 Foamability of egg white at two different temperatures.....	67
Figure 3.7 Stability of foams produced from egg white solutions at two different solution temperatures (4 and 20°C); foam volume stability (A) and foam liquid stability (B).	68
Figure 3.8 Foamability of egg white derived from egg white liquid (EWL) and egg white powder (EWP).	69
Figure 3.9 Comparison of foaming properties between fresh egg white liquid (EWL) and spray-dried egg white powder (EWP); (A) foam volume stability and (B) foam liquid stability.	70
Figure 3.10 Foamability of spray-dried egg white powder (EWP) at different protein concentrations (5, 10, 15 and 20%).	72
Figure 3.11 Foam stability of egg white at different protein concentrations (5, 10, 15 and 20%) made from EWP. (A) Foam volume stability and (B) foam liquid stability.....	73
Figure 3.12 Foamability of EWL solutions at different pH 3-10. Original pH of EWL=pH 8.82.....	75
Figure 3.13 Stability of foams produced from EWL solutions at different pH 3-10. Original pH of EWL = pH 8.82. (A) Foam volume stability and (B) foam liquid stability.....	76

Figure 3.14 Zeta potentials (ζ) of EWL solutions containing 10% egg white protein at different pH values.....	78
Figure 3.15 Pictures of EWL solutions (10% protein) with different pH values.....	78
Figure 3.16 Turbidity of EWL solutions containing 10% protein at different pHs ranging from pH 3 to 10.	78
Figure 3.17 Foamability of EWL solutions added with different concentrations of NaCl at 0-400 mM or CaCl ₂ at 0-100 mM.....	80
Figure 3.18 Foam volume stability of egg white foam in the presence of (A) NaCl and (B) CaCl ₂ at different concentrations.....	81
Figure 3.19 Foam liquid stability for egg white foam in the presence of (A) NaCl and (B) CaCl ₂ at different concentrations.....	82
Figure 3.20 Pictures of liquid egg white solutions containing (A) NaCl and (B) CaCl ₂ at different concentrations.	83
Figure 3.21 Turbidity of EWL solutions containing NaCl and CaCl ₂ at different concentrations which was determined by measuring absorbance at 600 nm.	83
Figure 3.22 Changes in the pH of EWL due to the addition of NaCl and CaCl ₂ at different concentrations.	84
Figure 3.23 Zeta potential of EWL solutions containing NaCl and CaCl ₂ at different concentrations.	85
Figure 3.24 Effect of sucrose on the foamability and form stability of EWL; (A) foamability, (B) foam volume stability and (C) foam liquid stability against drainage.....	86
Figure 3.25 Effects of hydrocolloids on the foamability and foam stability of EWL	89
Figure 3.26 Comparison between xanthan gum (XG) and guar gum (GG) for their effect on the stability of foam volume and foam liquid drainage of egg white foam produced at different concentrations (0.01, 0.02 and 0.04%).....	90
Figure 3.27 Viscosities of EWL solutions with and without added hydrocolloids.....	90
Figure 4.1 Pictures of egg white foams produced from EWL solution using a whipped cream dispenser.....	94
Figure 4.2 Egg white foam appearance after shaking different numbers of times made from EWP at 10% (w/v, protein); (A) 10, (B) 20, (C) 30, (D) 40, and (E) 50 times.	100
Figure 4.3 The volume of foams produced by a gas sparging method (whipped cream dispenser) after shaking EWP solution for different times (10– 50 times).	101
Figure 4.4 Stability of EWP foams produced by a gas sparging method after shaking for different times (0-50 times); (A) foam volume stability and (B) foam liquid stability.....	102

Figure 4.5 Changes to stability of foam volume (A, B, C and D) and foam liquid (E, F, G and H) over time after foam preparation. Foams were prepared by gas sparging in a whipped cream dispenser after shaking different volumes of EWP solution, for different times (10-50 times).	105
Figure 4.6 Appearance of foams prepared from (A) 50 ml of egg white liquid (EWL) and (B) 50 ml of egg white powder (EWP) solution by gas sparging using a whipped cream dispenser after shaking for 20 times.....	106
Figure 4.7 Foamability of EWL and EWP solutions produced by gas sparging using whipped cream dispenser.....	107
Figure 4.8. Stability of foams prepared with EWL and EWP solutions after shaking for 20 times with 50 ml solution; (A) foam volume stability and (B) foam liquid stability.....	108
Figure 4.9. Foamability of EWP solution at two different temperatures of 4 and 20°C.	109
Figure 4.10 Stability of foams prepared from EWP solution at two different temperatures 4 and 20°C: (A) foam volume stability and (B) foam liquid stability.	110
Figure 4.11 Pictures of foams from egg white powder solutions containing different concentrations of protein and sucrose.....	111
Figure 4.12 Effects of concentrations of sucrose and protein on (A) foamability, (B) foam volume stability and (C) foam liquid stability of foams produced from 100 ml of egg white powder (EWP) solutions after shaking 20 times.	113
Figure 4.13 Foamability of EWP solutions (10% protein; 4 and 20°C) prepared from EWP with three different types of hydrocolloids at different concentrations.	114
Figure 4.14 Pictures of foams prepared from EWP solutions mixed with three different types of hydrocolloids at different combinations and concentrations.	115
Figure 4.15 Stability of foam volume and foam liquid of egg white foams prepared, at two different temperatures, from solutions of egg white powder mixed with hydrocolloids at different concentrations.	116
Figure 4.16 Egg white liquid (EWL) solutions containing 10% protein after heat treatment at different temperatures.	118
Figure 4.17 Changes in the turbidity of egg white liquids after heat treatment at different temperatures which was determined by measuring absorbance at 600 nm.	118
Figure 4.18 Pictures of egg white liquid (EWL) containing 10% protein after heat treatment at different temperatures; (A) 58°C for 3.5 min, (B) 60°C for 2 min and (C) 63°C for 2 min.	119

Figure 4.19 Foamability and foam stability of foams produced from EWL solutions after heat treatment at 20, 58, 60 and 63°C which were shaken for 20 times; (A) foamability, (B) foam volume stability and (C) foam liquid stability.	121
Figure 4.20 Images of EWL samples taken 1 hr after heat treatment at 58°C for 3.5 min (A and D), 60°C for 2 min (B and E) and 63°C for 2 min (C and F) in the absence (A, B and C) and presence of ingredient mixture (sucrose, hydrocolloids, citric acid) (D, E and F).	123
Figure 4.21 Effect of heat-treatment of EWL containing ingredients (sucrose, hydrocolloids, citric acid) at different temperatures (20, 58, 60 and 63°C) on (A) foamability, (B) foam volume stability and (C) foam liquid stability.	124
Figure 4.22 Foam stability of egg whites with and without added ingredients. The egg white solutions mixed with ingredients were heat-treated at different temperatures (20, 58, 60 and 63°C) prior to foaming. Foam volume stability (A, B, C and D) and foam liquid stability (E, F, G and H).	126
Figure 5.1 Effect of microwave cooking on the foam volume of egg white foam produced from EWL as a function of cooking times (10, 20, 30 and 40 s).....	135
Figure 5.2 Correlation between microwave cooking time and foam volume increase.	136
Figure 5.3 Correlation between microwave cooking time and loss of moisture from EWL foam due to evaporation.....	136
Figure 5.4 Effect of microwave cooking on the foam stability of egg white foam produced from EWL as a function of cooking times (10, 20, 30 and 40 s); (A) foam volume stability and (B) foam liquid stability.	137
Figure 5.5 Digital images of egg white foams prepared from EWL solutions and then cooked in the microwave oven for different times (A) 10 s, (B) 20 s, (C) 30 s and (D) 40 s.	138
Figure 5.6 Foam volume for different types of egg white solutions at different protein concentrations.	139
Figure 5.7 Loss of moisture from egg white foams prepared from EWL (10% protein) and EWP (10 and 20% protein) during cooking in the microwave for different times (10, 20, 30 and 40 s).....	140
Figure 5.8 Correlation between microwave cooking time and loss of moisture from foam during cooking in the microwave oven due to evaporation; (A) EWP foam at 10% protein and (B) EWP foam at 20% protein.	140
Figure 5.9 Foam stability of egg white foams prepared from EWL (10% w/v protein) and EWP solutions (10 and 20% w/v protein) after cooking in the microwave oven for different times (10, 20, 30 and 40 s). Foam volume stability (A, C and E) and foam liquid stability (B, D and F).....	141

Figure 5.10 Foam appearance after cooking in the microwave oven for different times (10, 20, 30 and 40 s). Egg white foams prepared from EWP solutions containing 10% protein (A, B, C and D) and 20% protein (E, F, G and H).	142
Figure 5.11 Effect of heat treatment of EWL solution at 20, 58, 60 and 63°C, prior to making foam on the foam volume (A), foam volume stability (B) and foam liquid stability (C) of foams after cooking in the microwave for 30 s.	144
Figure 5.12 Effects of addition of some ingredients on the foam volume (A), foam volume stability (B) and foam liquid stability (C) of EWL foams after cooking in the microwave oven for 30 s.	146
Figure 5.13 Effect of addition of mixtures of different ingredients into EWL solution on the foam volume (A), foam volume stability (B) and foam liquid stability (C) of foams after microwave cooking for 30 s.	149
Figure 5.14 Effects of heat treatment at 20, 58, 60 and 63°C of EWL solution containing ingredients (20% sucrose, 0.05% citric acid, 0.04% XG, 0.04% GG, 0.04% LBG and 2% GA) on the foam volume (A), foam volume stability (B) and foam liquid stability (C) of foams after microwave cooking for 30 s.	152

List of Tables

Table 2.1 Composition of egg white, egg yolk and whole egg excluding the shell.....	4
Table 2.2 Vitamin and mineral compositions of egg white, egg yolk and whole egg.	5
Table 2.3 The content of protein in major foods in the human diet.....	6
Table 2.4 The recommended dietary allowances of proteins for healthy people.....	6
Table 2.5 Digestibility of food proteins from different sources.....	8
Table 2.6 The content of essential amino acids in egg white, egg yolk and whole egg. ..	9
Table 2.7 Percentage of amino acids in egg white protein.	9
Table 2.8 Compositions of two fractions (granules and plasma) of egg yolk.....	15
Table 2.9 Physicochemical properties of egg white proteins.....	16
Table 2.10 Some characterisation methods used to analyse foam bubble and rheological properties of foam.....	32
Table 3.1 Preparation of EWL containing NaCl at different concentrations.....	57
Table 3.2 Preparation of EWL containing CaCl ₂ at different concentrations.....	57
Table 3.3 Formulation for EWL with sucrose at different concentrations.	58
Table 3.4 Formulations for EWL solutions with hydrocolloid (HC), such as xanthan gum (XG), guar gum (GG) and gum arabic (GA), at different concentrations.	59
Table 4.1 EWP solutions containing different concentrations of sucrose and protein formulated to make foams using a cream whipper.	96
Table 4.2 Formulations of EWP solutions containing a mixture of three types of hydrocolloids at different concentrations.	97
Table 4.3 Time taken for EWL solutions (8 ml) to reach from 20°C to a desired temperature (30-60°C) using a 60°C water bath.....	98
Table 4.4 Heat treatment of EWL at different temperatures for different times.....	98
Table 4.5 Formulation of EWL with ingredients	99
Table 4.6 Foamability (%) of different volumes of EWL produced through gas sparging after shaking different times.	103
Table 5.1 Formulations of EWL with single ingredient at different concentrations. ...	132
Table 5.2 Seven different formulations of EWL solutions with different ingredients..	133
Table 7.1 Aerobic plate counts in non-heat treated EWL samples with and without added ingredients.	158

Table 7.2 Plate counts for thermophiles during 8 weeks storage at 4°C from EWL samples heat-treated at two different temperatures (58°C for 3.5 min and 60°C for 2 min).....	160
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List of Appendices

Appendix 1 Foamability (%) for EWL foams produced at different whipping speeds (3 and 5) using the whipping method.....	172
Appendix 2 Foamability (%) for egg white foams prepared from EWL solutions at two different temperatures (4°C and 20°C) using the whipping method.	172
Appendix 3 Foam volume stability (%) for egg white foams prepared from EWP solutions with different protein concentrations (5, 10, 15 and 20%) using whipping method.	172
Appendix 4 Foamability (%) of egg white foams prepared from EWL solutions with different pH values using the whipping method.....	172
Appendix 5 Foam volume stability (%) of egg white foams prepared from EWL solutions with different pH values using the whipping method.	173
Appendix 6 Foam liquid stability (%) for egg white foams prepared from EWL solutions with different pH values using whipping method.	173
Appendix 7 Zeta potential for EWL solutions at different pH values using Zetasizer Nano ZS90.....	173
Appendix 8 Foamability (%) of egg white foam prepared from EWL solutions after mixing with sodium chloride (NaCl) and calcium chloride (CaCl ₂) at different concentrations by using whipping method.	174
Appendix 9 Foam volume stability (%) for egg white foams prepared from EWL solutions with sodium chloride (NaCl) at different concentrations by using the whipping method.	174
Appendix 10 Foam volume stability (%) for egg white foam prepared from EWP solutions with different volumes (50, 100, 200 and 400 ml), which were shaken for different times (10, 20, 30, 40 & 50 times) using the sparging method.	175
Appendix 11 Foam liquid stability (%) for egg white foam prepared from EWP solutions with different volumes (50, 100, 200 and 400ml), which were shaken for different times (10, 20, 30, 40 and 50 times) using the sparging method.....	175
Appendix 12 Foamability (%) for egg white foam prepared from different types of egg white solutions using the sparging method and cooked in a microwave oven for different times (10, 20, 30 and 40 sec); solutions were EWL (10% w/v protein) and EWP solutions (10% & 20% w/w protein).....	176
Appendix 13 Foam volume stability (%) for egg white foam prepared from different types of egg white solutions using the sparging method and cooked in a microwave oven for different times (10, 20, 30, & 40 sec); solutions are EWL (10% w/v protein) and EWP solutions (10% & 20% w/w protein).	176

Appendix 14 Foam liquid stability (%) for egg white foam prepared from different types of egg white solutions using the sparging method and cooked in a microwave oven for different times (10, 20, 30, & 40 sec); solutions are EWL (10% w/v protein) and EWP solutions (10% & 20% w/w protein)..... 177