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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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