

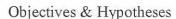
CHAPTER 3: OBJECTIVES & HYPOTHESES

3.1 Objectives

- To compare the moisture, protein, fat and ash content (%), pH, foaming overrun, coagulation and water-holding capacity of fresh shell egg, frozen egg pulp, spraydried egg powder and a commercial egg powder mixture.
- To compare the sensory characteristics and the shelf-life of sponge cakes which
 were baked with fresh shell egg, frozen egg pulp, spray-dried egg powder and a
 commercial egg powder mixture and stored at two temperatures (21°C and 31°C).

3.2 Hypotheses

- The protein content, pH, foaming properties, coagulation properties and waterholding capacity of egg ingredients will directly affect the sensory characteristics of sponge cakes.
- The sensory characteristics will have noticeable differences among the sponge cake samples. The functional properties of dehydrated egg products are altered by processing and it is therefore expected that the products baked using dried egg powder will be more firm and compact. The colour and flavour of sponge cakes would be more pale and milder respectively, than the products which are baked with fresh shell egg and frozen egg pulp. This is because the colour and flavour are degraded during spray-drying (Bergquist, 1995).
- The shelf life of the sponge cakes will also have differences. This is because the
 protein of the egg product will denature during high temperature drying (i.e. Pan
 drying and spray drying). Hence, the water-binding capacity is reduced (Cheftel et





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al., 1985) which increases the water activity (free water) of the final product. In addition, high water activity will speed up the physical (staling) and microbiological (mould growth) spoilage (Jones, 1994). Therefore, differences in the shelf-life of sponge cake samples are expected.