CHAPTER 4: GENERAL DISCUSSION

The main objective of this study was to determine the effect of boiling for 1 h and irradiation at a target dose of 9 kGy on the bacterial quality and safety of RTE bovine tripe. inoculated with *C. perfringens* ATCC 13124 spores, and stored at 5 and 15 ˚C for 14 days. In order to maintain sensory properties of tripe, mild preservation treatments had to be used (Del Torre *et al*., 2004). For this reason, the following hurdles were employed in the development of RTE bovine tripe: papain treatment, boiling, vacuum packaging, gamma irradiation and chilled storage.

4.1 METHODOLOGY

Bovine tripe is a highly perishable product with a shelf life of 24 h at chilled temperatures (Giaccone *et al.,* 1994) due to the high levels microorganisms and autolytic enzymes present in the gut of ruminants. Since rough washing is the preferred method for cleaning of tripe in South Africa, the initial bacterial numbers remained high prior to boiling. Nonetheless, the long cooking kills many of the resident bacteria on tripe. Tripe requires long cooking time because it contains collagen and elastin fibres (Zarkadas *et al.,* 1996), which gives tripe a tough texture.

However, since RTE bovine tripe is a minimally processed product, cooking time was reduced to 1 h in order to maintain the desirable sensory attributes of tripe. In order to successfully reduce cooking time, washed bovine tripe was tenderised with concentrated papain (5 %) for 2 h at room temperature. Papain is a proteolytic plant enzyme used as a meat tenderizer (Lui and Tang, 2001). Papain tenderizes tripe by breaking the peptide bonds that bind collagen and elastin fibres.

Due to the reduced cooking time, it was expected that the initial high microbiological flora of tripe would persist after cooking. This was the case in this study with APC and ASC remaining high after boiling for 1 h. This can be explained by the principles of heat inactivation kinetics as affected by the initial microbiological numbers on tripe.