**Category:** Ready-To-Eat meat products  
**USDA HACCP Category:** Heat treated, shelf-stable; Not heat treated, shelf-stable  
**Processing:** Fermentation, cooking/drying  
**CCP:** fermentation, cooking/drying  
**Validates:** product characteristics needed to ensure no growth of *Listeria monocytogenes* during refrigerated or room-temperature storage of product

**CCP:** The USDA final rule addressing the control of *Listeria monocytogenes* (LM) on ready-to-eat (RTE) meat and poultry products requires processors of RTE products to take one or more specific steps to ensure the absence of LM from their products. One of three “Alternatives” to control are available. The rule requires processors of RTE meat and poultry products to adopt one of three designated “Alternatives” to control LM on their products. The Alternatives involve varying levels of control and microbiological testing of food-contact surfaces. In Alternative 1, the processor uses a post-lethality treatment that reduces or eliminates LM AND an antimicrobial agent or process that suppresses or limits LM growth throughout product shelf-life. In Alternative 2, the processor uses either a post-lethality treatment that reduces or eliminates LM OR an antimicrobial agent or process that suppresses or limits LM growth throughout product shelf-life. Under Alternative 3, only sanitation measures are relied upon to control LM. For summer sausage and related products, the reduction of water activity accomplished through cooking/drying, along with the reduction of pH via fermentation or addition of an acidulant, could serve as antimicrobial processes by making the finished product unsuitable for LM growth - Alternative 2. Compliance guidance from USDA has stated that an effective antimicrobial process will allow no more than a 1.0 log increase in LM on an RTE product throughout its shelf-life. This guidance also summarized scientific studies indicating that LM will not multiply at a water activity of < 0.92 or a pH of <4.39.

**Study Design:** Small individual pieces of summer sausage and related products were inoculated on the outer surface with a 5-strain cocktail of *L. monocytogenes*, re-packaged under vacuum, and then stored either at 41°F / 5°C for 4 - 11 weeks or at room temperature (70°F/21°C) for 5 weeks. Numbers of *L. monocytogenes* were determined before storage and after 1 and 4, 5, or 11 weeks.

**Results and Discussion:** Levels of *L. monocytogenes* fell rapidly on summer sausage and related products during refrigerated storage, with decreases of 0.6 – 2.4 log CFU in the first week of storage. No growth occurred during the next 3 or 8 weeks. During 1 week of room-temperature storage, populations fell by 1.6 – 3.2 log CFU and no surviving cells were detected 4 weeks later. Processing summer sausage and related products to yield water activity of ≤ 0.96, a pH of ≤ 5.3, and at least 4.5% water-phase salt, appeared to effectively allow the processor to operate under Alternative 2, with the combination of fermentation and cooking/drying as the antimicrobial processes.

**Validated Critical Limits** are processing parameters that result in:
- water activity of 0.96 or lower, AND
- pH of 5.3 or lower, AND
- % water-phase salt of 4.5 or higher


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