

**STERILIZATION METHODS FOR
MYANMAR FERMENTED TEA**

PhD (DISSERTATION)

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ABSTRACT

Myanmar fermented tea samples were collected from the wholesale distributors as well as local retailers in Yangon. The total bacteria count and yeast and mold count were determined by standard plate count method. Isolation and identification of microflora were also performed. The gram staining reaction, biochemical tests and API 20 E strips were used for identification of bacteria. Colony morphology and the lactophenol cotton blue mount were made for mold colonies while germ tube formation test, sugar fermentation test and sugar assimilation tests were carried out for yeast colonies. Pathogenic enteric bacteria: *Escherichia coli*, *Salmonella*, *Staphylococcus aureus* and *Vibrio cholerae* were also determined using their specific media. Determinations showed the aerobic plate count of both bacteria and fungi, total coliform and species of microorganisms present in Myanmar fermented tea samples from the retailers to be greater than that of the samples from the distributors. *E-coli*, *Staph. aureus*, *Salmonella* and *Vibrio cholerae* were found to be absent in both collections of the samples. Most of the bacteria present in Myanmar fermented tea were *Bacilli*. *Pseudomonas*, *Enterobacter* and *Klebsiella* groups were also found. Myanmar fermented tea samples contained yeast of the *Candida* species. *Geotrichum candidum* and *Trichosporon capitatum* were also found. *Aspergillus Penicillium*, *Rizopus* and *Paecilomyces* were the molds common in these Myanmar fermented teas. The shelf lives for Myanmar fermented tea under different storage conditions were also studied and shown to be one week at room temperature, one month at 4°C and four months for vacuum packed samples. In the sterilization treatments, sodium chloride, calcium hydroxide and acetic acid were used as the chemical sterilants. Vacuum packing and washing with boiling water was also used for sterilization. All microorganisms in fermented tea were sterilized by boiling

water. The optimum concentrations of chemical sterilants were found to be 5% for sodium chloride, 0.5% for calcium hydroxide and 1% for acetic acid. The time required for sterilization was 10min for chemical sterilants and 1min for boiling water. Treatment with boiling water for 1min decreases the content of nitrogen, caffeine, tannin and fat significantly. Treatment with chemical sterilants decreases nitrogen, caffeine and tannin content by small amount. The protein content, ash content, metal and phosphorous content remain unchanged after sterilization treatments. The sterilization treatment carried out in this study while definitely removing most of the contaminating microorganisms made the Myanmar fermented tea to alter its characteristic aroma and flavour.