

**A STUDY OF MICROBIAL COMMUNITY IN BLACK TEA AND
IDENTIFICATION OF CRITICAL CONTROL POINTS OF MICROBIAL
HAZARDS IN BLACK TEA MANUFACTURING PROCESS**

By

R U Pathirana

Department of Microbiology,

University of Kelaniya,

Sri Lanka.

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ABSTRACT

Tea is the second most consumed beverage in the world but only little knowledge exists about microbiological aspects of tea.

Sri Lankan tea has the highest demand in the world by offering high quality tea to the consumer, in term of taste. But with modern food safety aspects we should aware to produce microbiologically safe tea and this research was an attempt to identify microbiological hazards of tea and points of contamination during the manufacturing process.

Tea in its all forms is microbiologically sensitive. Bacteria, molds and yeasts grow in all types of tea depending on the processing conditions. The occurrence of microbial succession in the black tea manufacturing process was evaluated using standard microbiological techniques. Since washing procedure was known to be the most effective, it was adapted with certain modifications depending on the sample type.

The phyllosphere microflora of green tea flush was subjected to the processing but their existence changed with the undergoing treatments. The microflora of the withered leaf almost resembled the phyllosphere microflora consist of fungi, yeasts and bacteria but in lower figures due to the reduced moisture content. Yeasts and lactic acid bacteria, *Lactobacillus* and *Leuconostoc* ; were the predominant flora isolated from fermented dhools, but the existing flora diminished at once when the dhools were subjected to firing except heat resistant spores especially of fungi. The presence of *Bacillus* as well as fungi such as *Penicillium* and *Aspergillus* on both

withered leaves and made tea gave evidence for the retaining of heat resistant spores during firing step.

Improper storage conditions may lead to deterioration of made tea due to microorganisms that arise from the remaining spores or due to post process contamination. However made tea was not sterile and the shelf life is depended mainly on the storage conditions.

The potential sources of microbial contamination can be reduced greatly by thorough concern on personal hygiene, equipment hygiene and environmental hygiene as recommended by Codes of Hygiene Practice of the FAO / WHO Codex Alimentarius Commission. The potential points of microbiological contamination were identified as Critical Control Points (CCPs) along the production process with the aim of applying Hazard Analysis and Critical Control Point (HACCP) system for the black tea manufacturing. The CCPs identified during this research in related to microbiological hazards were the steps of Sorting / Grading and Storage and thus stringent monitoring should be carried out.

The implementation of HACCP requires the control of CCP and successful quality management promote a very strong international trade by increasing confidence on food safety.