THE SESAME (*Sesamum indicum L.*) VALUE CHAIN AND MICROBIOLOGICAL QUALITY OF CRUDE SESAME OIL, A CASE STUDY IN WESTERN TIGRAY, ETHIOPIA

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ABSTRACT

Crude sesame oil (CSO) is unrefined edible oil and widely consumed. Storage instability, off-flavour, and discoloration are, however, challenges during CSO extraction. The purpose of this study was to map sesame value chain, assess the suitability of CSO extraction plant, and analyse CSO microbial quality. A structured Questionnaire and checklist were used to assess the sesame value chain and suitability of CSO extraction plant. Microbiological quality assessment was conducted using standard analytical methods. Stakeholders in the sesame value chain were inclusive of farmers, market mediators, traders, regulatory, extension workers and researchers. Though, illiteracy, inadequate technology, and poor infrastructure were the drawbacks. The CSO extraction plant was suitable apart from inadequate ingredients and CSO handling and unhygienic practices. Total aerobic bacteria (4.34 - 5.06 log10 CFU/m^2 on swap surfaces, 2.44 log10 CFU/g in CSO), total Coliforms (5.81 log10 CFU/g of animal manure and 1.36 log10 CFU of indoor air after extraction), yeasts and moulds (2.31 log10 CFU/g of sesame seed and CSO and 4.47 log10 CFU/m^2 of swap sample), Aspergillus species (1.17 - 1.33 log10 CFU/g of sesame seed/CSO, 3.37 - 3.50 log10 CFU/m^2 of swap samples), and Staphylococcus aureus (2.09 log10 CFU/g of CSO, 2.56 - 3.22 log10 CFU/m^2 of surface swaps, 3.26 - 3.77 log10 CFU/protective clothing, 0.74 - 1.82 log10 CFU of the indoor and outdoor air) were detected. Escherichia coli, Salmonella and Shigella were not detected. In conclusion, potential microbial pathogens were detected to impose food safety problems and economic loss. Training on good handling and hygienic practices and thoughtful regulatory implementation are significant.

Keywords: CSO, value chain, suitability, microbial quality, pathogens