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Enumeration of yeasts and molds in tea and herbs using different techniques and culture media

E. T. Jayashantha[1*], G. Asalaarachchi[2] and S. I. Abeygunawardena[1]

[1]Department of Microbiology, Faculty of Science,
University of Kelaniya, Sri Lanka
[2]Ceylon Tea Services (PLC), Peliyagoda, Sri Lanka
erangasts2@gmail.com

The International Standard Organization (ISO) has recommended the use of Dichloran 18% glycerol agar (DG-18) to enumerate yeast and mold in food (ISO 21527-2:2008) with reduced water activity ($a_w < 0.95$). This ISO method uses the Surface Spread technique (SS-t). According to the ISO standard procedure, pour plate method is allowed to perform after a proper validation of results using the same medium. The objective of this study was to compare the Pour Plate technique (PP-t) and spread plate technique using DG18 agar medium to enumerate yeast & mold in tea and herbs (e.g. lemongrass). The DG 18 agar medium was also compared with Yeast extract Dextrose Chloramphenicol (YDC) agar to enumerate these microorganisms.

The tea samples and the herbs obtained from tea industry were used as the matrices for this study because these components have a water activity a less than <0.95. The sample preparation and the test were performed according to the ISO 21527-2:2008 standard procedures. Total of 20 samples of herbs and tea were used in this microbiological testing programme and the results were statistically analyzed using Paired-t test, with Minitab-14. The DG-18 medium gave average yeast and mold counts in tea samples as 2.58±0.42 CFU (log)/g in SS- technique whereas PP technique gave 0.41±0.08 CFU (log)/g. The fungal burden in herbs was 2.69 ±0.54 CFU (log)/g (SP-t) and 2.17 ±0.89 CFU (log)/g (PP-t). The YDC medium using pour plate technique gave average yeast and mold counts for tea and herb samples as 2.44 ±0.44 CFU (log)/g and 2.88 ±2 CFU (log)/g respectively. The DG-18 agar medium with the same technique gave 2.52±0.43 CFU (log)/g and 2.46±1.5 CFU (log)/g. The statistical analysis indicated that the results obtained either using two different media or using two different techniques with DG 18 medium were not significantly different

Keywords: Yeasts, Molds, Tea, DG-18 agar medium

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