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AOAC Validation of Multiple TEMPO Methods for the Enumeration of Quality Indicator Organisms in Cannabis Flower: AOAC Performance Tested MethodSM 041001, 121204, 060702, 080603 and 050801

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Abstract: Introduction: The TEMPO® system is AOAC® Performance Tested MethodSM (PTM) approved for the automated enumeration of yeasts and molds (YM), total aerobic count (AC), coliform count (CC), Escherichia coli (EC) and Enterobacteriaceae (EB) in cannabis flower. The methods utilize selective dehydrated culture medium and an enumeration card containing 48 wells across three dilutions for the automatic determination of the Most Probable Number (MPN). Objective: As part of the AOAC® Research Institute's Emergency Response Validation (ERV) Program and PTM program, the alternative methods were compared to the FDA Bacteriological Analytical Manual (BAM) to add cannabis flower (delta 9-tetrahydrocannabinol >0.3%; 10 g test sample) as a PTM matrix extension. Methods: The TEMPO methods were validated following AOAC Official Methods of AnalysisSM Appendix J validation guidelines and Standard Method Performance RequirementSM where available. Five replicates at 3 levels of contamination (low, medium and high) were evaluated. Results: The 90% confidence interval of the difference between the means of each TEMPO method (YM, AC, CC, EC and EB) and the corresponding reference method obtained in the comparison study demonstrated statistical equivalence between the candidate methods and traditional culture plating. Significance: The AC, YM, CC, EC and EB TEMPO methods are a rapid, easy-to-use automated alternatives to traditional plating procedures for the enumeration of quality indicator organisms in cannabis flower.