AOAC® Independent Laboratory Evaluation of the CHROMagar AquaCHROM™ ECC for the Detection and Enumeration of Coliforms and Escherichia coli in Water Samples

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Introduction

AquaCHROM™ ECC is a chromogenic medium for the detection of E. coli and coliforms in water samples (ex. tap water, well water, lake water and bottled water). The product is comprised of a powder medium and is supplied in pre-weighted doses. Each dose is for a 100 mL water sample. Species differentiation is based on the use of two chromogens instead of a chromogen and fluorochrome, which eliminates the use of a UV lamp.

Purpose

The purpose of this AOAC® Independent Laboratory Study was to compare the alternative method to FDA/BAM Chapter 4 and EPA 1604 reference methods for the detection of coliforms and E. coli in water as part of the Performance Tested Method program.

Methods

The assay was compared to two reference methods: FDA/BAM Chapter 4: Enumeration of Escherichia coli and the Coliform Bacteria and EPA 1604: Total Coliforms and Escherichia coli in water by Membrane Filtration using a Simultaneous Detection Technique reference method. The assay was also compared to the AOAC OMA 991.15: Total Coliforms and Escherichia coli in water: Defined Substrate Technology (Colilert) Method following an unpaired study design.

Qualitative Results

Statistical analysis was conducted according to the Probability of Detection (POD) statistical model. No statistically significant difference was observed between the three methods.

Quantitative Results

The 90% confidence interval of the bias between the two methods fell between -0.5 to 0.5 Log10 for each concentration indicating equivalence between the two methods.

Study Highlights

This novel assay allows for fast, reliable detection and enumeration of Coliforms and Escherichia coli with presumptive results obtained in as little as 18-24 hours.