

SCANSTATION IN FOOD TESTING

Study carried out in LIAL Aurillac France in 2017

Goal

The goal of this study is to evaluate the ScanStation® 100 performances vs. manual method for food analysis and milk payment tests.

For optimal comparison, 1238 foods samples, in duplicates, were performed with several microorganisms according to references methods of the laboratory.

This document includes graph of bacterial concentration vs. time.

Protocole and tested bacteria

- The inoculation was made in pour and spread plates
- The version V3 of the ScanStation® software was used for the automatic incubation/counting

Bacterias

- Aeromonas : *A. hydrophila*
- Bacillus : *B. liqueniformis*, *B. subtilis*
- Citrobacter : *C. braakii*, *C. freundii*
- Enterobacter : *E. aerogenes*, *E. agglomerans*, *E. cloacae*
- Enterococcus : *E. faecalis*, *E. faecium*
- Escherichia : *E. coli*
- Klebsiella : *K. pneumoniae*
- Lactobacillus : *L. casei*
- Listeria : *L. innocua*, *L. monocytogenes*
- Micrococcus : *M. luteus*
- Proteus : *P. mirabilis*, *P. vulgaris*
- Pseudomonas : *P. aeruginosa*,
- Salmonella : *S. enteritidis*, *S. typhimurium*
- Serratia : *S. liquefaciens*, *S. marcescens*
- Shewanella : *S. putrefaciens*
- Staphylococcus : *S. aureus*, *S. epidermidis*, *S. saprophyticus*

Yeast and molds

- Candida : *C. albicans*
- Aspergillus : *A. brasiliensis*
- Penicillium : *P. roqueforti*

Results

The interpretation of results was made with 2 characteristics bacteria.

- *Escherichia coli* on TBX
- *Coliformes* on VRBL

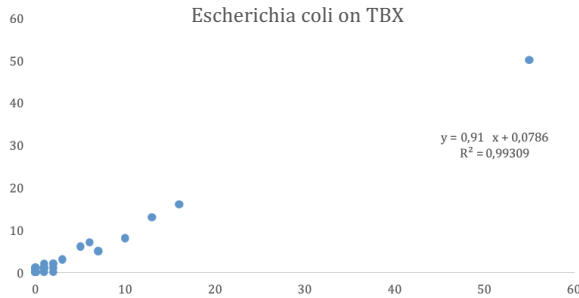


Figure 1 : correlation graph of manual counting / ISS counting

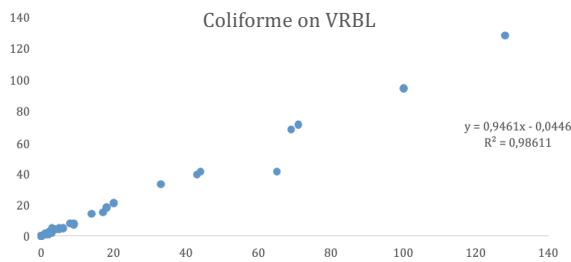


Figure 2 : correlation graph of manual counting / ISS counting

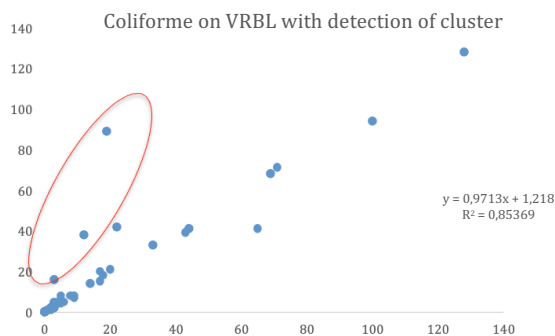


Figure 3 : correlation graph of manual counting / ISS counting

Results interpretation

The assays demonstrate (with regression graph, correlation graph...) that the ISS is able to:

- Count the colonies during incubation
- Count before the invasive colonies

The different graphs demonstrate that there is not a significant difference between the manual counting and Scan station's counting. The correlations coefficients justify the good results.

Graph of bacterial concentration vs. time

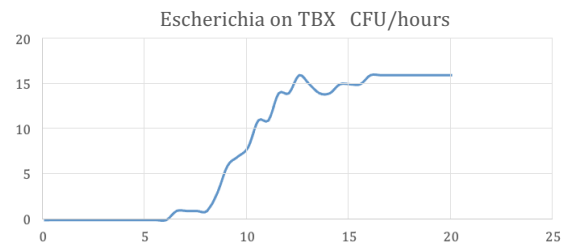


Figure 4 : evolution of the number CFU / time

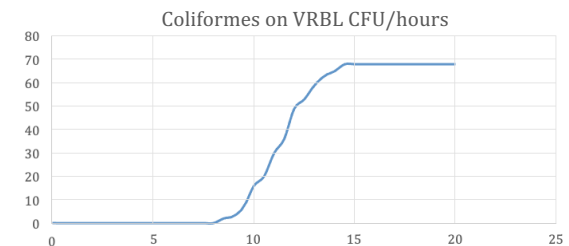


Figure 5 : evolution of the number CFU / time

The graph shows that the number of CFU increase for the 15 hours first hours of incubation. From 15 hours onwards, the CFU number stays constant. Real time colony counting during incubation allows to quickly determine a contamination level of the sample and allows to define correctives actions before the end of incubation.