Surrey Diagnostics

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Comparison of Speedy Breedy and a conventional technique for the detection of Escherichia coli in dried herbs

We were approached by a Herb company that had potential issues with contamination of Herbs and spices imported from Africa and Asia. These products although pre tested and clear prior to shipping, were sometimes found to be contaminated by the time the shipment arrived in the UK some weeks later. This results in the extreme cost, in time, transport, lost revenue and being unable to facilitate orders to customers. The company wanted to look at ways in reducing this processing time along with an in house method of sterilisation should contamination be found. Two samples of chopped spearmint were given to us to test by conventional method of plating and incubation and a duplicate sample with the new "Speedy Breedy" Respirometry system. The samples were supplied in two bags, one being a contaminated sample of spearmint with *Escherchia coli* the other a known clean sample. Our task was to determine which was clean and which was contaminated.

Procedure

Samples of each herb (1g) were placed in 9ml volumes of Sterile Ringers solution and mixed using a votex mixer. Aliquots of each suspension were transferred to the Speedy Breedy chambers containing MacConkey broth and also plated onto MacConkey agar. Both tests were incubated at 44^{o}C for 24 hours. After incubation, lactose fermenting colonies (red) on the MacConkey agar were counted.

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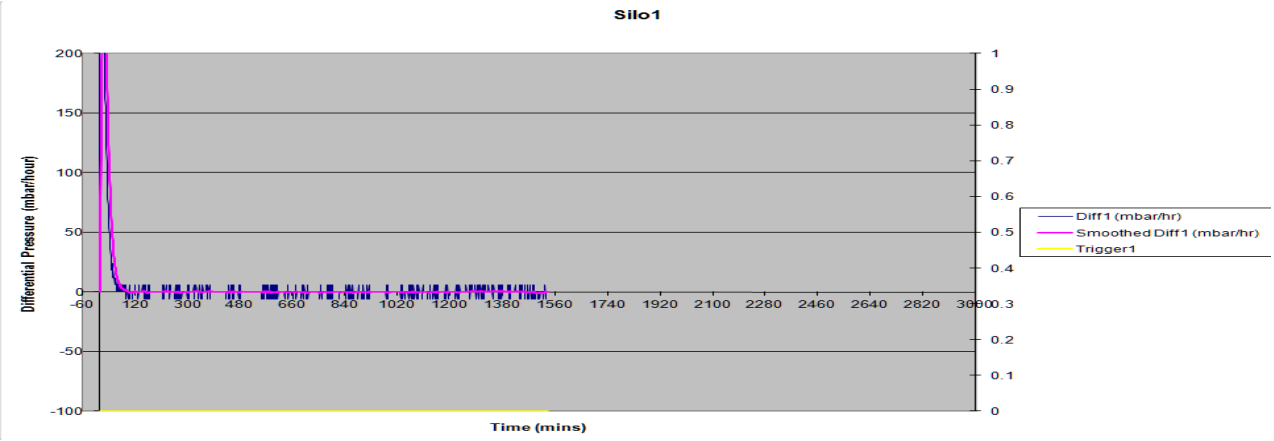
Results

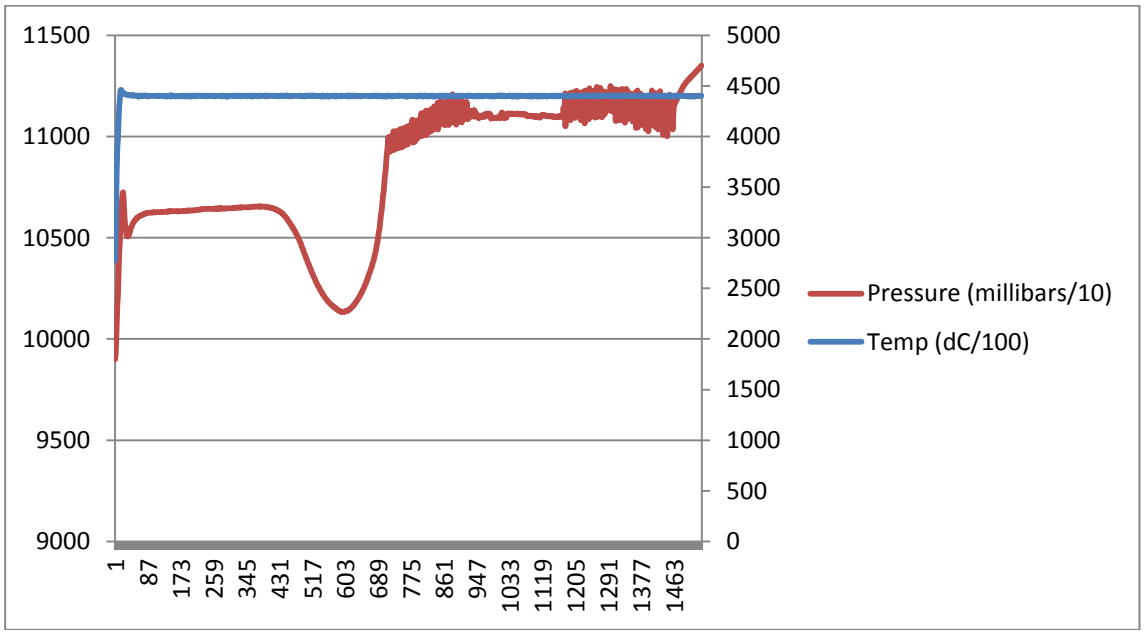
	***cfu E. coli*/g**	**Speedy Breedy *E. coli* test**
Herb Sample A	0 (24h)	negative (24h)
Herb Sample B	600 (24h)	positive (6h 56 min)

Speedy Breedy data

Silo 1 > Negative growth in 24 hours



Silo2 > Positive Growth after only 7 hours.



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Conclusion

The traditional method took a full 24 hour period of incubation to show any growth of *Coliforms* in particular *E.coli* . The "Speedy Breedy" detected presumptive *E. coli* in under 7h, compared to 24h for the conventional plating technique, although the machine was running for a 24 hour period is clear by the graph pattern in "Silo 2" above, that the growth began at around the 7 hour point, indicating the presence of *E.coli*.

By using the "Speedy Breedy" to determine the growth of *E.coli* it has shown a **benefit in time saving of 17 hours** to indicate the presence of *E.coli*, which may be operationally critical to some users. Although this does not determine the count, it does prove beyond doubt that the "Speedy Breedy" does show there is microbial growth within the media vessel, this is shown in the graph by the positive pressure change created as the bacteria grows and respires. Whereas in the Silo 1 sample there is no change in the pressure, reflecting the sample is clear of bacterial contamination,

David Pimbley BSc. M.Biol
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