



DETECTION OF FUNGI / YEASTS CONTAMINATION IN A FOOD FACTORY

Comparison of impinger & Coriolis methods

/ CONTEXT

Monitoring of microbial contamination in the air around sensitive processing and packing lines has become an important part of safety food manufacturing (as bakery goods, cheese and other dairy products, fresh pasta, ready meals and chilled ready-to-eat foods). The methods routinely used for controlling the microbiological quality of the air in food factories have lagged behind those available for other applications (hospital and pharmaceutical sectors), with rudimentary qualitative methods still being widely used. Alternative methods are now available and are fully adapted to food manufacturers.

This study concerns the comparison of 2 different liquid air sampling methods in various locations of a food factory.

/ MATERIALS

- Samplers : Coriolis® μ, sterile cones vs Impinger.
- Liquid of sampling: 15 mL of physiologic salt
- +0.005% TritonX100 (FZT) or physiologic salt (FZ).
- OGGA (oxytetracycline yeast glucose agar) plates with low pH for detection of fungi and yeasts.

/ PROTOCOL

- Coriolis® μ: 100 L/min, 1 min sampling.
- Impinger: 12 L/min, 1 min sampling.
- Analyze: 1 mL of sampling medium spread on OGGA plates
- Incubation of plates at 25°C during 3 days.

/ CONCLUSION

Coriolis® μ air sampler with its high air flow rate (up to 300L/min) and high efficiency allows more accurate quantification of the fungi contamination levels than impinger sampling does. Coriolis® μ is fully adapted to the food industry, especially for high risk manufacturing which requests a regular monitoring of specific pathogens or spoilage organisms. Rapid microbiologic methods (RMM) such as quantitative PCR assay or cytometry can also be performed after liquid sampling and provide more information in a much shorter time (3 hours vs 3 days!).

/ RESULTS

Nine samples are sampled in different rooms. The fungal contamination measured by culture in OGGA media associated with Coriolis® sampling gives an higher reading of fungi and yeast level than Impinger. The Coriolis® μ is shown as the most sensitive air sampler.

The results are illustrated in the figure 1.

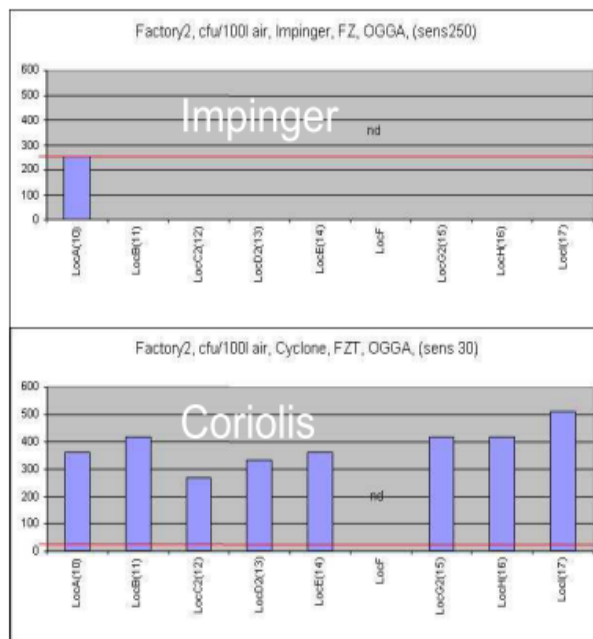


Fig.1: Graphical comparison of sampling with an Impinger and Coriolis® μ air sampler. Fungal contamination results plotted are in cfu/100L air. The red lines indicate the detection limit (1 colony / plate). The sensibility of the Impinger is 250 cfu/100L air and the sensibility of Coriolis® μ is 30 cfu/100L air.