



*Société Française
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VI^e Congrès National
10, 11, 12 mai 2004
Palais des Congrès Bordeaux-Lac

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PATULIN DETECTION FROM PENICILLIA IN BOTTLED WATER COMMODITY SYSTEM.

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Control of Mycological Contaminants of BOttled Water (COMBOW) is an EU-CRAFT project which is investigating the significance of fungi to this commodity. Some fungi produce toxins (mycotoxins). These compounds contaminate food and drink with detrimental effects on human health and economies. Mycotoxins have been reported recently in stored water and production confirmed *in vitro*. Patulin is a mycotoxin and has been regulated by the EU since 1 November 2003 in apple juice and ingredients. *Penicillium expansum* is associated particularly with production in apples. The fungus was isolated from a bottled water production system as part of the COMBOW project. However, patulin is produced by a wide-range of fungi. Water solubility is a characteristic of patulin and so it could be present in high concentration. The toxin could also be contained within fungi and consumed together with the rest of the fungus when water is drunk.

The taxonomy of the penicillia (still) is based on cultural and morphological characteristics. Many patulin-producing penicillia are included in subgenus *Penicillium*. However, it has been concluded that the “subgenus” is monophyletic on the basis of DNA analysis and species concepts are varieties (*e.g.* chemotypes) of the same taxon. Considerable variation in phenotype has been reported in *P. expansum*, including patulin detection. Other species within subgenus *Penicillium* are reported as consistent patulin producers. However, only recently have some strains of *P. brevicompactum* been reported to produce patulin. This fungus was also isolated in the COMBOW project. The novel use of a probe of the isoeopoxydon dehydrogenase (IDH) gene of the patulin biosynthetic has facilitated patulin analysis in isolates by showing (a) the lack of potential, and (b) species variation for patulin production. The results presented here demonstrate patulin producing potential within associated fungi isolated from a water bottling plant and include IDH gene probe analysis. This work will enable appropriate measures to be implemented for patulin contamination control in bottled water *via* a HACCP approach, and help clarify patulin producing capability within penicillia.

We thank the EU project QLK1-CT-2002-70843 for financial support.