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Patulin penicillia from a bottled water factory

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Background

The objective of this work is to assess the significance of penicillia isolated from a bottled water factory particularly in relation to mycotoxin production. The annual revenue from sales of bottled water is very large: bottled water has an image of being healthy. There has been an increase in reports of fungal contamination of bottled water and one of mycotoxin production. Patulin is known to be produced by *Penicillium expansum* and has been reported from *P. brevicompactum*. The isoepoxydon dehydrogenase (IDH) gene of the patulin metabolic pathway has been used to determine the potential for patulin production in fungi.

Methods

Fungi were obtained in pure culture from throughout a bottled water factory including from the bottled water and obtained in pure culture to assess where contamination may occur. *P. expansum* and *P. brevicompactum* strains were analysed for patulin by TLC and the IDH gene by the PCR. Other mycotoxins were also analysed.

Results

Penicillia were isolated from sites within the factory including *P. expansum*. In addition, *P. brevicompactum* was frequent. Patulin was detected from *P. expansum* and ambiguously from *P. brevicompactum*. However, the IDH gene was detected from both in some cases. Other important mycotoxins were detected from the strains. Secondary metabolites in medium used to produce biomass for DNA analysis were observed.

Conclusions

Fungi are capable of being present in bottled water from the manufacturing process. Important mycotoxin producers are present including patulin ones. The effect of mycotoxins on DNA analysis requires consideration. Further work is needed to determine whether the mycotoxins can be present in bottled water.