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Note

N-Methylbenzthiazolone-(2)-hydrazone (Besthorn's hydrazone) as a sensitive spray reagent for patulin

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Patulin is a metabolite of various *Penicillium* and *Aspergillus* species¹ and belongs to the mycotoxins because of its acute toxicity and carcinogenic properties^{2,3}. Therefore, studies on the presence of patulin in foodstuffs are important. So far, this toxin has been detected in apples⁴, apple juice^{5,6}, meat and meat products⁷, grain⁸ and bread⁹. In most instances the toxin was detected by TLC and rendered visible with different spray reagents, e.g., *o*-dianisidine^{10,11}, *p*-anisaldehyde¹², phenylhydrazine⁶ and β -aminoethyl diphenylborate⁷. The lowest patulin concentrations that can be detected by these techniques are in the range of 0.2 μg (ref. 11) to 0.1 μg (refs. 7 and 12).

N-Methylbenzthiazolone-(2)-hydrazone (Besthorn's hydrazone)¹³ couples very rapidly with amines and phenols^{14,15} and with quinones^{16,17} to form azo dyes. Therefore, it seemed that this substance might be a highly sensitive spray reagent for detecting the phenol derivative patulin on thin-layer chromatograms.

METHOD

A 2- μl volume of different concentrations of patulin in chloroform was spotted on pre-coated silica gel sheets (Polygram Sil N-HR; Macherey, Nagel & Co., Düren, G.F.R.) and developed with ethanol-water (4:1, v/v)¹⁰ up to 10 cm from the starting line. The dried sheet was sprayed with a freshly prepared 1% solution of Besthorn's hydrazone (C. Roth, Karlsruhe, G.F.R.) in methanol.

RESULTS AND DISCUSSION

Patulin coupled with the reagent to form brownish spots that could be easily distinguished from the unstained plate. The lowest detectable concentration is 0.06 μg , which is far below the detection limits of other reagents. Therefore, spraying with Besthorn's hydrazone can be recommended as a very simple but highly sensitive procedure in all instances where small amounts of patulin are to be detected.

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