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Note

Gas–liquid chromatographic determination of niridazole in biological fluids

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Niridazole, 1-(5-nitro-2-thiazolyl)-2-imidazolidinone, is commonly marketed under the name of Ambilhar. Although this compound has been extensively used for the treatment of schistosomiasis (Mandel *et al.*[1]), nothing has been published on either analytical methods or expected serum and urine levels.

The method described in this publication is suitable for the estimation and rapid determination of niridazole down to the level of 500 ng/2 ml of sample.

MATERIALS AND METHODS

Analar-grade reagents were used throughout. Dimethyl sulphoxide was redistilled before use.

Gas–liquid chromatography

Gas–liquid chromatographic (GLC) analyses were carried out using a Pye Series 104 chromatograph which was equipped with a flame ionisation detector. The column was a 6 ft. × 4 mm I.D. coiled glass tube which had been silanized with a solution of 5% (v/v) dichlorodimethylsilane in toluene, then rinsed with methanol, and dried. The packing consisted of 1% XE-60 (w/w) on Gas-Chrom Q, 100–120 mesh. The column was conditioned before use by heating at 265° for 18 h while the carrier gas was flowing. The following were the conditions of analysis: column temperature, 255°; injection point temperature, 260°; detector oven temperature, 300°; nitrogen carrier gas flow-rate, 66 ml/min; hydrogen flow-rate, 86 ml/min; air flow-rate, 316 ml/min. Under these conditions the retention time of niridazole was 27.75 min.

No carry-over of niridazole was experienced.

Extraction procedure

A 2-ml sample of either serum or urine was acidified with 1 ml HCl and extracted with the extraction solvent dimethyl sulphoxide–dichloromethane (1:5) (5 ml) by shaking for 5 min. After centrifuging for several minutes, the solvent phase was

removed and the aqueous phase extracted again. The combined extracts were concentrated in an evacuated oven at 50°. The residue was dissolved in dimethyl sulphoxide (50 μl) and a sample (1 μl) was injected into the gas–liquid chromatograph.

RESULTS

Quantitation

Aliquots of solution of known concentrations of niridazole dissolved in dimethyl sulphoxide (500 ng–1 μg) were examined by GLC as described above. The peak areas from the record were found to increase linearly with increasing concentration.

Recovery

Niridazole was added dissolved in dimethyl sulphoxide (in a concentration ranging from 500–10 μg) to 2 ml of blank serum or urine in order to examine the efficiency of the extraction procedure. The mean recovery on eight samples was 86.8 $\pm$ 5%.

Specificity

In all the urine and serum samples tested the gas–liquid chromatograms have been free from interfering peaks.

DISCUSSION

Niridazole has been used for many years to treat patients with schistosomiasis, but only recently has this drug been found to be immunosuppressive. Salaman *et al.*[2] have shown that niridazole gives rise to significant prolongation of survival of heart grafts in the rat. It therefore seemed essential that if this drug were to be considered for use as an immunosuppressive agent an assay be available to determine its serum and urine levels.

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