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**AIMS:** Problems of establishing proof of illicit opiate use are reflected by the number of different approaches which have been used. Methods include morphine/codeine ratio, presence of acetyl codeine [1], presence of papaverine metabolites [2], noscapine metabolites [3] and presence of reticuline [4]. The most commonly adopted approach is morphine/codeine ratio, which implies the use of illicit heroin but is not conclusive. Meconin, a non-opiate, found in crude opium persists through the preparation of illicit heroin, providing a 'chemical trail' for illicit opiate use. Could the presence of meconin be used as an indicator of illicit opiate use?

**METHODS:** The method we use for confirmation and identification of opiates in urine has been published (5). Briefly, it comprises of digestion (glucuronidase) followed by solid phase extraction, derivitisation (propionylation), followed by gas chromatography with mass selective detection in full scan mode. The major group of samples were urines collected from clients attending local substance misuse clinics, a smaller group was from post mortem forensic cases was also taken. These urines had screened positive for opiates using immunoassay. We used the predominant presence of morphine as an indicator of heroin use.

After establishing the identity of the opiates present in a sample the mass selective detector trace was then examined for the presence of meconin which produces a distinct mass spectrum (major fragments 165, 194, 147, 176 m/z) and has a relative retention factor of 0.536 against dipropylated morphine.

**RESULTS:** In 300 cases in which morphine was the major opiate our findings were as in Table 1. The presence of meconin was established in 284 cases (94.7% sensitivity).

Morphine	Codeine	6 MAM <sup>†</sup>	Meconin
100 %	90.3 %	56 %	94.7 %

**TABLE 1** (<sup>†</sup> 6-monoacetylmorphine)

In a total of 62 cases where morphine was not the major opiate detected (28 codeine, 30 dihydrocodeine, and 4 pholcodine) and in 3 medicinal heroin users no meconin was found (100% specificity). In post mortem urines there were 12 cases in which morphine was the major opiate, in 9 of these meconin was present (75% sensitivity). In 11 post mortem cases where other opiates were found (7 codeine, 3 dihydrocodeine and 1 oxycodone) no meconin was detected (100% specificity).

**CONCLUSION:** Meconin may be used as a marker for illicit opiate use in both urines from living patients and in those from post mortem cases. In urines taken from patients where illicit heroin use was suspected we were able to establish illicit opiate use through the presence of meconin in 284 out of 300 cases. In the somewhat more limited study of post mortem cases the presence of meconin was established in 9 out of 12 possible cases of illicit heroin use. In none of the samples from both patients and post mortem cases in which there was no evidence of illicit opiate use was meconin found. These investigations indicate that using this method provides an effective means of meconin detection.

#### REFERENCES:

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**KEYWORDS:** *Illicit opiates, Meconin*

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