DETERMINATION OF 3,5-DIACETYL-1,4-DIHYDROLUTIDINE USING HPLC WITH FLUOROMETRIC DETECTION
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ABSTRACT

3,5-Diacetyl-1,4-dihydrolutidine is a novel candidate for detection in dicyclomine (DDI) abuse and has been studied for its potential as a marker of DDI abuse. In this study, we report the use of high-performance liquid chromatography (HPLC) to separate and detect DDI using fluorimetry and produce a standard curve of DDI.

INTRODUCTION

Fluorimetry was performed in the field by detection of various substances and can be used to determine toxicity using the principle of Naka, based on the fluorescence of the analyte in dicyclomine (DDI). By measuring the amount of DDI, the profile of the analyte is determined and the compound can be measured regardless of the other matrices.

MATERIALS & METHODS

HPLC separation of 3,5-Diacetyl-1,4-dihydrolutidine (DDI) was established and confirmed by comparison to authentic DDI standard. A chloroform solution of DDI was prepared and diluted in acetone to a final concentration of 5 mg/mL. A substance known to undergo DDI: T:G tissue degradation (diluted) was used as a control.

RESULTS (1)

HPLC separation of 3,5-Diacetyl-1,4-dihydrolutidine (DDI) was established and confirmed by comparison to authentic DDI standard (Figure 1). The retention time for the compound was 4.4 min.

RESULTS (2)

Analyses of a wide range of concentrations of DDI and DDI were used to assess the activity of CYP2D6 and CYP3A4. A comparison was made between results obtained from direct measurement of DDI and DDI, and indirect measurement (CYP2D6 and CYP3A4 kinetic studies on product formation).

CONCLUSIONS

Indirect measurement of DDI activity via fluorimetric formation and determination correlates with the production of metabolite by dicyclomine. As such, HPLC separation of DDI provides a useful alternative method for measuring the activity of CYP2D6 and CYP3A4 in dicyclomine.

REFERENCE