

# The use of Solid Phase Extraction (SPE) for detection Methylphenidate and Ritalinic Acid in small volume plasma samples

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## Abstract

This methodology describes an extraction of Methylphenidate (MPH) and Ritalinic Acid (RA), from plasma using solid-phase extraction (SPE), followed by syliation reaction. In addition an ion chromatographic method was developed for the specific GC determination of MPH and RA. Treated plasma samples were passed through SPE cartridge with Hydrophilic-Lipophilic-Balanced (HLB) sorbent to retain and elute target analytes. Using N-Methyl-N-(trimethylsilyl)trifluoroacetamide (MSTFA) and N-Methyl-bis(trifluoroacetamide) (MBTFA) reagents, eluent was derivatized and the non-polar product was further analyzed using GC-MS. A calibration curve for MPH and RA was constructed in the range (2 to 250)  $\mu\text{g/mL}$ . The SPE resulted in higher extraction recovery (mean  $\bar{x} \%$ ) with  $\% \text{ R.S.D.s}$  similar in both matrix and solvent ( $\bar{x}\%$ , respectively).

# 1 Introduction

Methylphenidate, commonly known by the trade name Ritalin<sup>®</sup>, is a central nervous system (CNS) stimulant used to treat attention deficit hyperactivity (ADHD) and narcolepsy.

## 2 Experimental

The usual experimental details should appear here. This could include a table, which can be referenced as Table 1. Notice that the caption is positioned at the top of the table.

Table 1: An example table

Header one	Header two
Entry one	Entry two
Entry three	Entry four
Entry five	Entry five
Entry seven	Entry eight

### 2.1 Method and materials

Reference

### 2.2 Sample Preparation

#### 2.2.1 GC/MS

### 2.3 Instrumentation

#### 2.3.1 GC/MS

GC

## 3 Results and discussion

### 3.1 Linearity

### 3.2 Percision and accuracy

### 3.3 Recoveries

## 4 Discussion and conclusion

### 4.1 Reliability

### 4.2 Practicality

### 4.3 Cost

## 5 References