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Quantitative Method Development for Ketamine Drug

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ABSTRACT

This study developed the method for quantitative analysis of the drug ketamine by gas chromatography mass spectrometry (GC/MS). Full scan and Selected Ion Monitoring (SIM) mode were used for the identification and quantification of ketamine. The study selected ion m/z 102, 138, 152, 180 and 209 for identification, and for the quantification ion m/z 180 was used. The method was validated with a linear range of 50-1000 $\mu\text{g/mL}$. The linear coefficient of determination r^2 was 0.9949 or above. The limit of detection (LOD) was 1 $\mu\text{g/mL}$, and the limit of quantification (LOQ) 1 $\mu\text{g/mL}$. The intra-day precision was within 4.7% and inter-day precision within 4.4%. This method is used for the identification of ketamine and also for the quantitative analysis employed in real samples. From the analysis of 55 real samples, the average ketamine level was from 57.8 to 99.4%. Most specimens were white crystalline powder while a small portion was white powder. This study thus established a ketamine drug analysis method with simple steps and short time of analysis. In addition, no derivatization reagent was needed.

Key words: ketamine, gas chromatography mass spectrometry, select a specific fragment ion detection, full MS scan