XXVIII BALKAN CLINICAL LABORATORY FEDERATION MEETING AND XIII NATIONAL CONFERENCE OF CLINICAL LABORATORY

8 - 11 SEPTEMBER 2021, SOFIA

Detection of mianserin by tandem mass spectrometric method

Gulsum Abusoglu[1]*, Duygu Eryavuz Onmaz[2]*, Sedat Abusoglu[2]*, Fatma Humeyra Yerlikaya[2]*, Ali Unlu[2]*

[1] Department of Medical Laboratory Techniques, Selcuk University Vocational School of Health, Konya, Turkey

[2] Selcuk University Faculty of Medicine, Department of Biochemistry, Konya, Turkey

PURPOSE / OBJECTIVES

Mianserin (fig.1) is a tetracyclic antidepressant with relatively few anticholinergic and cardiovascular side-effects. Its clinical efficacy is comparable to that of tricyclic antidepressants. It is a potent antagonist at 5-hydroxytryptamine (5 HT) receptors and also has antihistaminic properties. Most frequently reported side effects of mianserin are sedation and weight gain. Other side effects are the occurrence of increased appetite, headache, and postural hypotension. The aim of this study was to develop a rapid and simple determination method for the determination of mianserin. Mianserin is a tetracyclic antidepressant with relatively few anticholinergic and cardiovascular side-effects. Its clinical efficacy is comparable to that of tricyclic antidepressants. It is a potent antagonist at 5-hydroxytryptamine (5 HT) receptors and also has antihistaminic properties. Most frequently reported side effects of mianserin are sedation and weight gain. Other side effects are the occurrence of increased appetite, headache, and postural hypotension. The aim of this study was to develop a rapid and simple determination method for the determination of mianserin.

MATERIALS & METHODS

Mass spectrometric analyses were performed using an Shimadzu LC-20-AD (Kyoto, Japan) coupled with a ABSCIEX API 3200 triple quadrupole mass spectrometer (USA) equipped with an electrospray ion source (ESI) operating in positive mode. The precursor/product ion transitions of mianserin and internal standard (carbamazepine) were m/z 265.2/91.1 and m/z 237.1/193.1, respectively. Sample preparation procedure was briefly, 100 µL of the internal standard (carbamazepine) was added to 200 µL sample and vortexed for 1 min. Protein precipitation was achieved by adding 550 µL of acetonitrile. The mixture was centrifuged at 2000 × g for 10 min. The supernatants were evaporated with nitrogen gas. The residue was dissolved in 200 µL acetonitrile:water (20:80; v:v%) and 30 µL was injected.

RESULTS

The linearity range and correlation coefficient were 1.95–1000.0 ng/ml and 0.996 for mianserin, respectively. The retention time of mianserin and total run time were 1.03 and 3 min, respectively. The intra- and inter-assay imprecision ranged from 3.2% to 9.8%. The inter-day accuracy values ranged from 93.26 to 114.58%.

A simple, rapid, cost-effective and robust LC–MS/MS method has been developed for the detection of mianserin.

RESULTS

The mean extraction recovery of the method was found to be 95.58% and matrix effect values were less than 12.7%.

Figure 1. Molecular structure of Mianserin

SUMMARY/CONCLUSION

A simple, rapid, cost-effective and robust LC–MS/MS method has been developed for the detection of mianserin.