

DETERMINATION OF RISPERIDONE IN BLOOD AND HAIR BY LC-ESI-MS-MS-TQD.

Margherita Ferrante, *Laboratory of Environmental and Food Hygiene – Department “G.F. Ingrassia” - University of Catania – Italy*

Nunziata Barbera, *Laboratory of Forensic Toxicology – Department “G.F. Ingrassia” - University of Catania – Italy*

Antonino Petralia, *Operating Unit of psychiatry General Hospital University - Vittorio Emanuele Company of Catania; Department Clinical and Molecular Biomedicine - University of Catania – Italy*

Gea Oliveri Conti, *Laboratory of Environmental and Food Hygiene – Department “G.F. Ingrassia” - University of Catania – Italy*

Salvatore Sciacca, *Laboratory of Environmental and Food Hygiene – Department “G.F. Ingrassia” - University of Catania – Italy*

Guido Romano, *Laboratory of Forensic Toxicology – Department “G.F. Ingrassia” - University of Catania – Italy*

Background/Aims: Mental illnesses produce some of the most health problems faced by society. Scientists have long known that these mental illnesses arise from combinations of genes and environmental factors. Now the role of the environment in the etiology of mental illness has become more clear.

The antipsychotic drugs are commonly used for the treatment of schizophrenia and anxiety disorders. Although hair analysis has become a test widely used to detect the use/abuse of many toxic and therapeutic substances, very few data are available regarding hair testing for antipsychotic drugs. The risperidone (RSP) is one of the less investigated substances.

The possibility to identify and quantify antipsychotic drugs in human hair could be an interesting epidemiological, clinical and forensic tool in therapeutic drug monitoring. The aim of the present pilot study was to develop and validate a method for the quantitative determination of RSP in blood and hair samples by LC-ESI-MS-MS.

Methods: study was carried out on blood and hair samples collected from psychiatric patients treated with risperidone. Each patient gave informed consent. Hair samples were washed, decontaminated, pulverized, incubated in 1 ml of HCl 0.1N and extracted with chloroform:isopropanol (80:20; v/v) at pH 7, pH 9 and pH 11. Blood specimens were extracted with 1-chlorobutane after alkalization with sodium borate (pH to 12). Bupivacaine was used as internal standard. Hair and blood extracts were analyzed by LC-ESI-MS-MS-TQD using Varian 320MS. Validation experiments (specificity, interferences, interday and intraday precision and accuracy, LOD, extraction yield, interferences and ion suppression) were performed.

Results: Our preliminary results showed that this method allows to detect and quantify risperidone in hair and blood of the patients chronically treated with doses ranging from 1 to 8 mg/daily.

Conclusion: Hair testing can be used in monitoring of chronic antipsychotics intake; however, further studies are required to improve its epidemiological applications

References:

Eva Choong, Serge Rudaz, Astrid Kottelat et. al. Therapeutic drug monitoring of seven psychotropic drugs and four metabolites in human plasma by HPLC-MS. *Journal of Pharmaceutical and Biomedical Analysis* 50 (2009) 1000-1008.