QUANTITATIVE DETERMINATION OF ANTIDEPRESSANT TRAZODONE BY UV-SPECTROPHOTOMETRIC AND EXTRACTION-SPECTROPHOTOMETRIC METHODS

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Antidepressant poisonings occupy a leading position among the psychotropic drug intoxications in the world. Trazodone (2-[3-[4-(3-Chlorophenyl)-1–piperazinyl]propyl]-1,2,4–triazolo[4,3-*a*]-pyridin–3(2*H*)-one) is a bicyclic antidepressant which is widely used in the modern treatment of the depression disoders. However, the medicine is associated with neurological side effects including depressed mood, sleep disterbances and autonomic dysregulations. Trazodone was the primary cause of acute and lethal poisonings. The lethal dose of trazodone was 2–4 g by *per os* administration, postmortem concentrations were reported: blood 15 mg/L, bile 45 mg/L, liver 57 μg/g, urine 2.5 mg/L. The aim of this study was to develop simple and sensitive methods of trazodone quantitative determination by the UV-spectrophotometric and the extraction spectrophotometric methods. Preliminary the light absorption of trazodone in UV-region of spectrum was studied, the wavelengths of maximum absorption of the medicine in methanol solutions were detected at 251 (E^1_1=251, ε=10250) and 310 (E^1_1=45, ε=1850) nm and shoulder at 275 nm. For the UV-spectrophotometric determination the light absorption of trazodone at the wavelength of 251 nm was used. The linearity of the calibration curve was within the range of concentrations from 5 to 50 μg/mL. The equation of the regression line was the following: $Y=(0.0227\pm3\cdot10^{-4})\cdot X+(0.011\pm9\cdot10^{-3})$;·(r=0.999), where Y is absorbance and X is the concentration (μg/mL); LOQ=6 mg/mL (RSD=15.8%); at the medium and high concentration level RSD did not exceed 3.0%. The extraction spectrophotometric method in visible region was developed on the base of the reaction of ionic associate formation with methyl orange, the acidic azodye. The linearity of the calibration curve was within the range of concentrations from 10 to 150 μg of trazodone introduced into a sample. The equation of the regression line was the following: $Y=(0.007\pm10^{-3})\cdot X+(0.019\pm0.009)$; (r=0.999), where Y is absorbance and X is concentration (μg per a sample); LOQ=13 μg (RSD=13.3%); at the medium and high concentration level RSD did not exceed 2.1%.

Thus, the methods developed satisfy the requirements of the chemical and toxicological analysis by the sensitivity and precision and can be used in toxicological study of biological samples on trazodone.