ABSTRACT

In the present study, two new spectrophotometric methods were developed for the determination of alprazolam and lorazepam, of benzodiazepine family. First order ratio derivative visible spectrophotometric method is based on the formation of coloured ion-pair complex using 1, 3- dinitrobenzene at pH 11.6 and alizirine as ion-pair complexing agent for alprazolam and lorazepam respectively. In order to avoid any possible interference by excipients and binders present in their pharmaceutical formulations, normal spectra were transferred in to their first order ratio derivative spectra. Linear range was found to be 140-720 μg ml^{-1} at a working wavelength of 502.9 nm for alprazolam and 40-320 μg ml^{-1} at 545.6 nm for lorazepam. For the determination of alprazolam and lorazepam, UV-spectroscopic method was also employed which require neither chemical reactions nor any solvent extraction or pretreatment procedures. The underlying fact is just to choose a working wavelength by using first order derivative spectra which eliminate any kind of possible interferences caused, except by active substances. Beer's law was obeyed in the concentration range of 0.1-1000 μg ml^{-1} for alprazolam and 0.1-4000 μg ml^{-1} for lorazepam. For the described methods the regression line equations were derived with their molar absorptivities which indicate the selectivity and sensitivity of the developed methods in desirable range while recovery studies proved that method is precise and repeatable. The proposed procedures were successfully applied to the determination alprazolam and lorazepam in commercial pharmaceutical preparations with good accuracy and precision.

Key words: ratio spectrophotometry, alprazolam, lorazepam, beer's law and pharmaceutical formulation.