

USAGE OF THIN LAYER CHROMATOGRAPHY METHOD FOR CHEMICAL-TOXICOLOGICAL ANALYSIS OF PIOGLITAZONE

Kucher T.V., Merzlikin S.I.

National University of Pharmacy, Kharkiv, Ukraine

TanyaKucher@list.ru

Pioglitazone is an oral thiazolidinedione antidiabetic agent, which use in type 2 diabetes mellitus treatment and acts primarily by decreasing insulin resistance. Antidiabetic action mechanism of drug is also realized by inhibition hepatic gluconeogenesis and improving glycemic control. Monograph of pioglitazone hydrochloride is absent in leading pharmacopoeias yet. Determination of pioglitazone by various analytical methods such as spectrophotometric, HPLC and LC MS in tablet formulations and human plasma has been reported in literature sources. Thin layer chromatography (TLC) is one of the most widely applied method in chemical-toxicological analysis, which use in the stages of preliminary and confirmatory researches. Proceeding tasks of chemical-toxicological searches, TLC can be used as an analytical and preparative method. The aim of the work was developing the TLC-procedures of pioglitazone determination acceptable for chemical and toxicological researches of drug. As investigated objects substance of pioglitazone hydrochloride and tablets Glutazone (Ukraine, Kusum Pharm) and Pioglar (India, Ranbaxy) were used. According to physical-chemical properties of pioglitazone methanol was selected as solvent. Behaviour of pioglitazone was investigated in different chromatographic conditions. Chromatographic plate Sorbfil, Armsorb and Merck were used as stationary phase. Solvents systems of general TLC-screening recommended by the International Committee of systematic toxicological analysis of the International Association of Toxicologists court (TIAFT), general systems of TLC-screening of acid and neutral agents and others were used as mobile phase. When using the mobile phase chloroform-methanol (90:10) Rf value pioglitazone was 0.82, 0.7, 0.79; chloroform-acetone (80:20) – 0.55, 0.42, 0.42; toluene-acetone-methanol-25% solution of ammonia (50:20:10:0.02) – 0.57, 0.57, 0.57; chloroform-toluene-acetate acid conc-ethanol (4.5:4.5:1:1) – 0.45, 0.45, 0.51 respectively. The most acceptable defined system chloroform-toluene-acetic acid conc.-ethanol (4.5:4.5:1:1). Detection of spots (areas of absorbance) of substances on the chromatogram was carried out in different ways: irradiation by UV light, action by general and specific detecting reagents. The most optimal reagent was Dragendorff spray modified on Munje (limit of detection 0.01 mg). Proposed procedure of chromatographic determination of pioglitazone can be used in the researches of extracts of biological material in a chemical-toxicological analysis on this drug.