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KINETIC SPECTROPHOTOMETRIC METHOD FOR THE DETERMINATION OF AZLOCILLIN IN PHARMACEUTICAL FLUID

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Azlocillin (Azl) is an acylampicillin antibiotic with an extended spectrum of activity and greater in vitro potency than the carboxy penicillins [1]. Azl is similar to mezlocillin and piperacillin. It demonstrates antibacterial activity against a broad spectrum of bacteria, including Pseudomonas aeruginosa and, in contrast to most cephalosporins, exhibits activity against enterococci. By the chemical structure penicillins are medicinal substances that belong to derivates of 6-aminopenicillanic acid (6-APA). Their characteristic feature is a rapid bactericide effect on the stage of microorganisms growth and insignificant side effects on human organism. Decomposition of one of the heterocycles leads to complete loss of activity meaning allergic action [2].

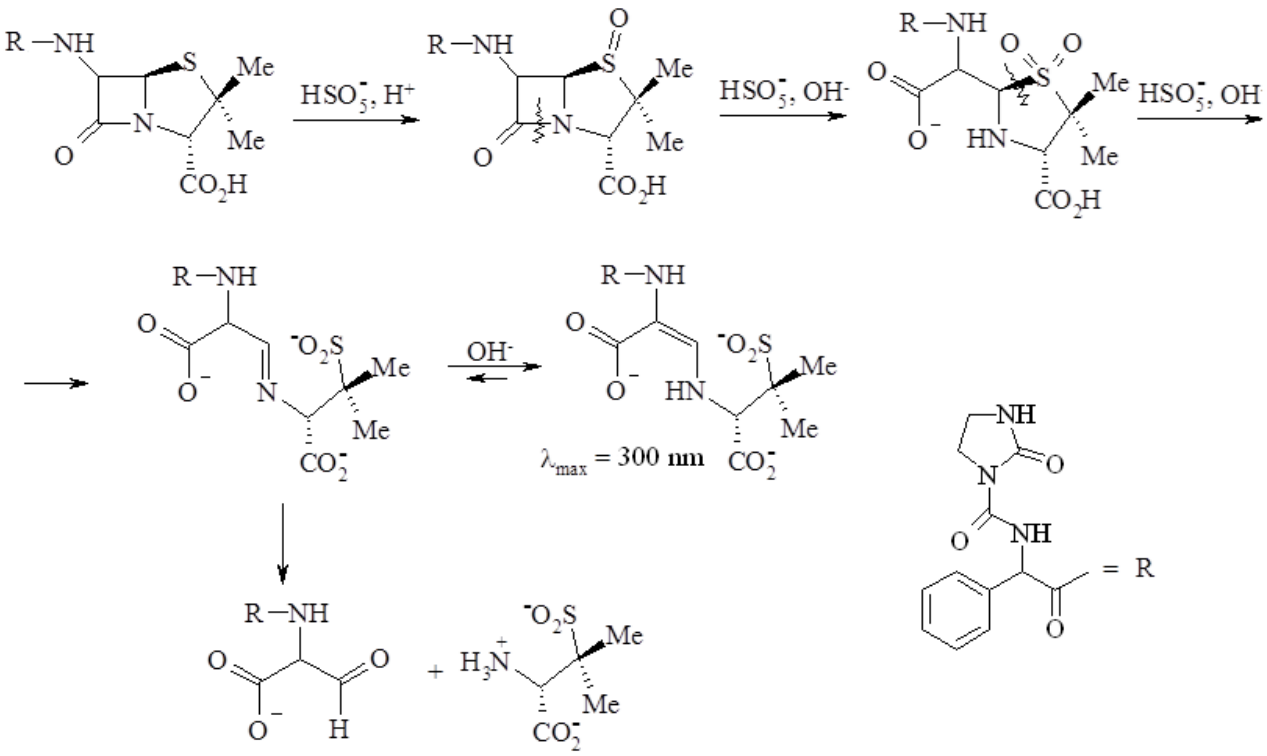
Azlocillin (Azl) (2*S*,5*R*,6*R*)-3,3-dimethyl-7-oxo-6-{[(2*R*)-2-{[(2-oxoimidazolidin-1-yl)carbonyl]amino}-2-phenylacetyl]amino}-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid belongs to the ureidopenicillin class and it is used for the treatment of serious infections caused by susceptible strains of microorganisms [3].

Literature review revealed enormous analytical method were reported for the estimation of azlocillin individually or in combination with other drugs [4]. International Pharmacopoeia recommends to determine penicillin summary in semisynthetic penicillin by neutralization method after preparation hydrolysis by excess of sodium hydroxide titrated solution at heating [5].

The following quantitative procedures of penicillin determination are described: using potentiometry titration and ionometry, spectrophotometry, extraction photometry, voltammetry and polarography, micelle electrokinetic capillary and paper chromatography, chemiluminescense and kinetic analysis methods [6-12].

A new procedure for the quantitative determination of *azlocillin* sodium in the Securopen® preparation by the method of back spectrophotometric method using potassium peroxomonosulfate ($KHSO_5$) as an analytical reagent was developed [13].

The scheme of peroxo acid oxidation and perhydrolysis conjugated reactions of Azl on the Figure:



The reaction kinetics of the peroxyacidic oxidation and perhydrolysis of Azlocillin with potassium peroxomonosulfate in the alkaline medium is studied. The new procedure was developed and ability of quantitative determination of penicillin in pharmaceutical preparation Securopen® by spectrophotometric method using potassium peroxomonosulfate ($KHSO_5$) as analytical reagent was shown. RSD = (1.8 -3.0) %, δ = (+0.64 …- 0.91) %.

References:

1. United States Pharmacopeial Convention. 38th ed. 2015.; 3795.

2. The Merck Index. 13 th ed, Whitehouse station, Merck and Co 2001; 1621.

3. European Pharmacopeia 5th ed: Strasbourg: European department for the Quality of Medicines 2005; 2781.

5. The State Pharmacopeia of Ukraine, suppl. 2: RIREG, Kharkiv 2008; 357.

6. The State Pharmacopeia of Ukraine, suppl. 4: RIREG, Kharkiv 2011; 3678.

7. M.Ye. Blazheyevskiy, S.P. Karpova and V.I. Kabachnyy. Quantitative determination of some penicillin by iodometric method using potassium peroxomonosulphate. J Chem Pharm Res 2013; 5(11): 637-643.

8. Khare B, Khare K. Spectrophotometric Determination of Antibiotic Drug Penicillin in Pharmaceutical Samples Using 2,6 Dichlorophenol Indophenol, N-Bromocaprolactam and N-Chlorosuccinimide. Int J Rec Res Phys Chem Sci 2017; 4:1-7.

9. Singh D, Maheshwari G. Spectrophotometric determination of penicillins in pure and pharmaceutical formulations using Folin-Ciocalteu reagent. Drug Test Anal 2010; 2: 503-506.

10. Karpova SP, Blazheyevskiy MY et al. Quantitative determination of piperacillin by iodometric method using potassium peroxomonosulfate. Int J Pharm Sci Res 2018; 9(7): 3015-3019.

11. Sallach J, Snow D, Hodges L. Development and comparison of four methods for the extraction of antibiotics from a vegetative matrix. Envir Toxicol Chem 2016; 35: 889-897.

12. Svorc L, Sochr J. Voltammetric determination of penicillin V in pharmaceutical formulations and human urine using a boron-doped diamond electrode. Bioelectrochem 2012;88: 36-41.

13. Dubenska L, Blazhejevskyj M, Plotycya S. Voltammetric Methods for the Determination of Pharmaceuticals. J Meth Obj Chem Anal 2017;12: 61-75.