

VALIDATION OF A SIMPLE TITRIMETRIC PROCEDURE FOR THE DETERMINATION OF AMOXICILLIN AND AMPICILLIN IN PURE SUBSTANCE AND MEDICINAL PREPARATION

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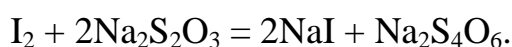
Introduction. Penicillins are β -lactam antibiotics. Basically, penicillin is a toxin synthesized by some species of mold *Penicillium* genus and is harmless to humans. They are used in the treatment of bacterial infections, mainly against Gram positive bacteria. The amount of a main substances of a penicilin is recomended to be determined by the method of HPLC (SPhU) or classical iodometric titration.

Aim. The aim of a new research is to develop and validate a sensitive, accurate, reliable and specific titrimetric procedure of Amoxicillin and Ampicillin pure substance and medical preparation quantitative determination by means of potassium hydrogenperoxymonosulfate as analytical reagent with good recovery.

Materials and methods. Amoxicillin as medical preparation (500 mg, capsules, TEVA, France) and Ampicillin as pure substance meeting the requirements of SPhU with the concentration of the main substance 100% were used.

As analytical reagent the triple potassium salt of Caro's acid, $2\text{KHSO}_5 \cdot \text{KHSO}_4 \cdot \text{K}_2\text{SO}_4$ (Acros Organics) was used. Its active substance is potassium hydrogen salt of peroxomonosulfuric acid, KHSO_5 .

Results and discussion. The proposed method is based on the S-oxidation reaction of amoxicillin and ampicillin by potassium hydrogenperoxymonosulfate in acidic medium. The excess of oxidation reagent is determined by the method of iodometric titration:



The oxidation-reduction interaction was determined to be quantitative and stoichiometric: 1 mol of KHSO_5 per 1 mol of a corresponding penicilin.

While ampicillin pure substance quantitative determination in the form of its S-oxide using potassium hydrogenperoxomonosulfate as analytical reagent $\text{RSD} = 1.81\%$, $\delta = 1.42\%$, for amoxicillin medical preparation $\text{RSD} = 2.34\%$, $\delta = -0.58\%$.

Conclusions. The proposed reaction of penicillin S-oxidation using potassium hydrogenperoxomonosulfate can be applied into analytical analysis. The obtained results have good agreement with those in SPhU. The obtained data shows that the proposed method can be applied for the determination of amoxicillin, and ampicillin in pure substance medical preparation and can be used as alternative to current pharmacopoeia methods with confidence.