QUANTITATIVE DETERMINATION OF PENICILLINS BY IODOMETRIC METHOD USING POTASSIUM HYDROGENPEROXOMONOSULPHATE

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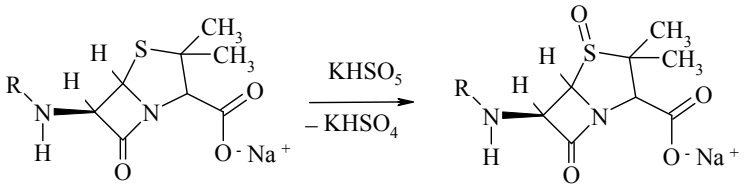
A new simple, accurate and precise titrimetric micro-procedure is developed for the analysis of semisynthetic penicillins (amoxicillin trihydrate, ampicillin trihydrate, sodium oxacillin and disodium ticarcillin) in pure sample (substance), tablets, lyophilized powder in vials for injection solution and capsules using potassium hydrogenperoxomonosulphate (PMS) as the oxidant. The method is based on the oxidation of penicillins with PMS in acid medium and the unreacted (excess) PMS is determined iodometrically under basic conditions.



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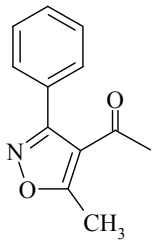

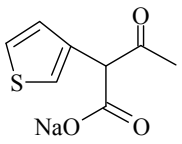

Oxacillin Ticarcillin

$$KHSO_5 + 2\,KI + 2\,KHSO_4 = I_2 + KHSO_4 + H_2O + 2\,K_2SO_4$$
$$I_2 + 2Na_2S_2O_3 = 2\,NaI + Na_2S_4O_6$$

The reaction conditions have been optimised and the stoichiometry of the reaction has been evaluated. 1 mol of penicllin is per 1 mol of KHSO5, quantitative interaction proceeds in 1 minute. A linear relationship exists between the amount of the drug and the titration end-point as shown by the values of correlation coefficient, r (0.9991–0.9999). The methods were applied to the analysis of dosage forms with results comparable to those given by the official methods. A propose method are indirect visual titration methods, and are simpler than, and superior to, many existing methods for the assay of penicillins. RSD ≤ 2.35 % (for substance ≤ 1.7%) (δ = –0.1…+1.0%).