

# Sensitive Extractive Spectrophotometric Method for the Determination of Some Statin Drugs in Pharmaceutical Preparations

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## Abstract

The statins (or HMG-CoA reductase inhibitors) formed a class of hypolipidemic drugs used to lower cholesterol levels in people with or at risk of cardiovascular disease. They lower cholesterol by inhibiting the enzyme HMG-CoA reductase, which is the rate-limiting enzyme of the mevalonate pathway of cholesterol synthesis. The context and purpose: Simple, sensitive and rapid extractive spectrophotometric method has been developed for the assay of statin drugs, simvastatin, pravastatin sodium and atorvastatin calcium, in pure form and in tablets. The method involves the formation of coloured ion-pairs between the drugs and the Mo (V)-thiocyanate binary complex followed by their extraction with 1, 2-dichloroethane and quantitative determination at 470 nm. The experimental conditions were optimized to obtain the maximum colour intensity. The method permits the determination of simvastatin, pravastatin and atorvastatin over a concentration range of 10-280, 10-150 and 10-180  $\mu\text{g mL}^{-1}$ , respectively, with the detection limit of 1.2, 0.26 and 0.642  $\mu\text{g mL}^{-1}$ , respectively. Results: The proposed methods are applicable for the assay of the investigated drug in different dosage forms and the results are in good agreement with those obtained by the official method that reported in the European pharmacopoeia and HPLC methods. The percentage recovery of 30-100  $\mu\text{g mL}^{-1}$  of the drugs under investigation are found to be 97.00-100.3 with a relative standard deviations (%) less than 1%. No interference was observed from common excipients present in pharmaceutical formulations. Conclusion: Simvastatin, pravastatin sodium and atorvastatin calcium drugs have been determined in pure form and in tablets using spectrophotometric method.

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