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Quantitative Estimation of Pravastatin Sodium and Aspirin by Area under Curve Method

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DESCRIPTION

In the present study a simple, rapid, economical, precise and an accurate area under curve method for the estimation of Aspirin and Pravastatin sodium in bulk and in combined dosage form (physical mixture) has been developed. The solvent used is 0.1 M Sodium hydroxide. The wavelength ranges 292-302 nm and 233-243 nm were selected to determine Aspirin and Pravastatin sodium respectively. Beer's range was obeyed in the concentration range of 5-45 µg/mL for Aspirin and 2-18 µg/mL for Pravastatin sodium. Percentage recovery was found in the range of 97.91%-99.0% for Aspirin and 92.3%-99.0% for Pravastatin sodium in the physical formulation. The results of analysis have been validated statistically and recovery studies confirmed the accuracy and reproducibility of the proposed method as per ICH guidelines.

Pravastatin is chemically Sodium (3R,5R)-3,5-dihydroxy-7-[(1S,2S,6S,8S,8R)-6-hydroxy-2-Methyl-8-[[(2S)-2-Methylbutanoyl]oxy]-1,2,7,8,8 a R, Hexahydro Naphthalen-1-yl]-Heptanoic acid, its molecular formula is $C_{23}H_{35}O_7Na$ having molecular weight of 446.51 g/mol. It appears as a white to yellowish crystalline powder, soluble in methanol and water [1].

Pravastatin act as a lipoprotein lowering drug through two pathways. Pravastatin inhibit the function of hydroxyl methyl glutaryl-CoA (HMG-CoA) reductase, as a reversible competitive inhibitor, Pravastatin sterically hinder the action of HMG-CoA reductase by occupying the active site of enzyme. Pravastatin also inhibits the synthesis of Very-Low-Density-Lipoproteins (VLDL) and Low-Density-Lipoproteins (LDL). These reduction increases the cellular LDL receptors, thus LDL uptake increases, removing it from the bloodstream [2].

Aspirin is chemically 2-acetyloxybenzoic acid or Acetylsalicylic acid, its molecular formula is $C_9H_8O_4$ having a molecular weight of 180.16 g/mol. It appears as colourless crystals or a white crystalline powder. It is soluble in water but partially soluble in alcohol [3].

Aspirin is used as analgesic, anti-inflammatory drug. Aspirin also has an antiplatelet effect by inhibiting the production of Thromboxane, which under normal circumstances binds platelet molecule together to create a patch over damaged walls of blood vessels.

Because Platelet patch can become too large, also block blood flow, locally and downstream [4]. Aspirin is also used long-term at low doses, to help preventing heart attacks, strokes, and blood coagulation formation in people [5, 6]. The more wide spread and appropriate use of both Pravastatin sodium and Aspirin in secondary prevention of cardiovascular diseases will avoid large number of pre mature death.

CONCLUSION

On literature survey it was found that many analytical methods including UV methods are developed for both Pravastatin sodium and Aspirin individually. But there is no method for the simultaneous estimation of Aspirin and Pravastatin sodium in combination. The exhaustive literature survey revealed that none of the most recognized pharmacopoeias and any major journals include these drugs in combination for simultaneous estimation of Pravastatin sodium and Aspirin by UV visible spectroscopy. Hence, there is a need for the development of newer, rapid, accurate and reproducible method for the simultaneous estimation of Pravastatin sodium and Aspirin in pharmaceutical dosage forms. Keeping this in mind and in continuation of our earlier work on Aspirin and Pravastatin sodium, in the present study an attempt has been made to simultaneously estimate Pravastatin sodium and Aspirin by Area under curve method.

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