

Formulation, Characterization, and Evaluation of Ticagrelor-loaded Nano Micelles Enhance Intestinal Absorption

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ABSTRACT

The biopharmaceutical categorization system (BCS) assigns ticagrelor as a class IV medication because of its limited solubility, permeability, and low bioavailability (36%). It was fabricated into nano micelles to adopt the absorption issue with ticagrelor. To improve ticagrelor properties related to poor solubility and permeability, it is combined with D-alpha-Tocopherol Polyethylene Glycol 1000 Succinate (TPGS), As TPGS has solubilizing action, a protective effect against cytochrome P450 3A4 enzyme and a permeation enhancer by suppressing the p-glycoprotein efflux transporter. Therefore, it was chosen for the preparation of ticagrelor Nano micelles.

These micelles were created using a straightforward solvent casting technique. A 1:2 (Ticagrelor: TPGS) ratio and 10mL water proved to be the most appropriate formula in the trial design, which comprised three variables of ethanol, water, and TPGS contents. The gathered information disclosed that the encapsulation effectiveness was 98%, with a spherical form with 42nm diameter, a polydispersity value of 0.287 and a homogenous.

Keywords: Ticagrelor, TPGS, Nano micelles, Permeability enhancement, Ex vivo diffusion model.

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