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Confirmation of More Stable Polymorphic Form of Etoricoxib at Room Temperature

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ABSTRACT

Polymorphic forms of etoricoxib have been reported in the literature and form I was considered to be the most stable one. However, in this work, it was found that form I and form V are enantiotropic by DSC analysis, solubility measurements and solution-mediated polymorphic transformation experiments with form V being more stable than form I at room temperature. Thermodynamic transition temperature is determined as (353.45 ± 0.10) K. Besides, form V would transform to form I with the seeding effect of form I at high temperature below the melting point of form V. The crystal structure of form V was solved for the first time. The molecules in form V are linked by weak hydrogen bond C-H \cdots O to form ring motif which is non-existent in form I.

Keywords: etoricoxib; polymorphism; transformation; solubility; crystal structure; stability; enantiotropic system.

Introduction

Polymorphism, an ability of a compound to form into different lattice structures in various crystallization conditions, is very common in pharmaceutical production.^{1,2} As is known, Gibbs free energy is the key factor to decide the relative stability of

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