A CALORIMETRIC STUDY OF SELECTED ACTIVE PHARMACEUTICAL INGREDIENTS

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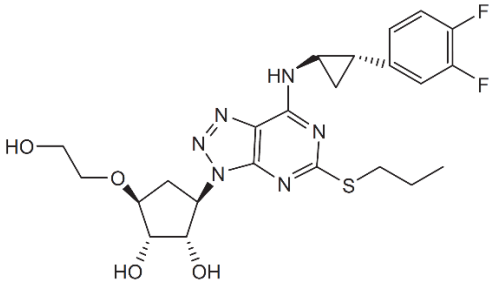
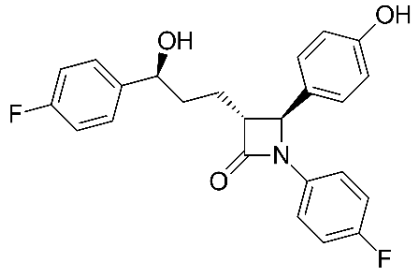
Thermal analysis and calorimetry present versatile characterization tools for the successful development of pharmaceutical products. These methods can provide valuable information required to determine the purity, the melting point and the heat of fusion of a substance. Alternatively, thermal analysis and calorimetry allow prediction of the physical stability of an active ingredient. It is also important to be aware of the different polymorphic modifications of active pharmaceutical ingredients in order to be able to optimize the production and storage conditions so that only the desired form is present.

In this work, the isobaric heat capacities of selected active pharmaceutical ingredients (see Figure) were determined over a wide temperature range using a precise adiabatic calorimetry and differential scanning calorimetry. Reliable heat capacity data for active pharmaceutical ingredients are essential for calculation of temperature dependence of their basic thermodynamic properties (enthalpy, entropy, the Gibbs energy).

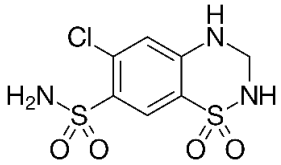
Chemical formulas of the studied active pharmaceutical ingredients



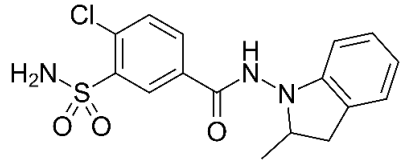
Ticagrelor (CAS RN: 274693-27-5)



Ezetimibe (CAS RN: 163222-33-1)



Hydrochlorothiazide (CAS RN: 58-93-5)



Indapamide (CAS RN: 26807-65-8)

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