

# Use of Differential Scanning Calorimetry (DSC) as a Screening Tool for Detecting Cocrystals and Eutectics of Tinidazole †

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**Abstract:** Recently, the use of DSC has been proposed as a rapid and efficient cocrystal screening method. This study aimed to apply DSC to verify if this technique can be used as a tool for detecting the cocrystallization process in binary physical mixtures (PMs) of tinidazole (TNZ) and coformers. TNZ and 7 coformers were mixed in 1:1 molar ratio in an agate mortar without grinding (to obtain PMs) or manually ground with the addition of a few drops of solvent [liquid assisted grinding (LAG) samples] for 120 min. TNZ, coformers and obtained samples were characterized using DSC, thermogravimetry (TG), hot-stage microscopy (HSM), diffuse reflectance infrared Fourier transform spectroscopy (DRIFT), and X-ray powder diffraction (XRPD). A detailed comparison of the DSC curves of the PMs, TNZ, coformers, and LAG samples revealed the occurrence of physical changes in the PMs. Indeed, three PMs exhibited typical DSC curves of cocrystal-forming PMs, while four others displayed DSC curves of eutectic-forming PMs. These results were consistent with the XRPD and DRIFT data, which indicated that only three cocrystals were formed. In summary, this study shows that DSC can be used as a screening tool to predict the formation of cocrystals and the eutectics of TNZ.

**Keywords:** differential scanning calorimetry; binary mixtures; cocrystal detection.

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## Conflicts of Interest

The authors declare no conflict of interest.