A NEW APPROACH TO OBTAINING A METASTABLE POLYMORPH OF IMATINIB MESYLATE

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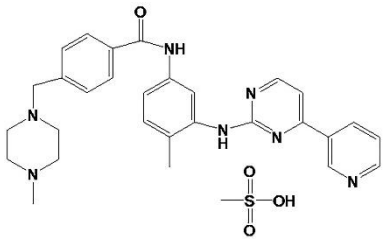
Discovery of all possible polymorphs of pharmaceutically active components is a necessary issue in pharmaceuticals because different polymorphs have a varying bioavailability. Of particular interest are metastable polymorphs, which exhibit enhanced dissolution kinetics in physiological fluids. However, reproducible preparation of metastable forms is a non-trivial task, typically requiring the development of complex, multi-step procedures or high-throughput screening.



Imatinib mesylate

In this study, we used for screening polymorphs of the pharmaceutically active component the approaches previously proven successful in working with phenylbutazone [1] and olanzapine [2]. We developed a method for the reproducible preparation of a metastable polymorph of imatinib mesylate (see the structure in the Figure above), whose melting point is lower than that of the stable commercial form by 70 K. Preparation of metastable forms of imatinib mesylate is complicated by its tendency to be oxidized by air oxygen in liquid solutions and upon heating, as well as by its ability to absorb water from the air. The developed method eliminates the possibility of undesirable reactions, ensuring reproducible results through thermodynamic control of the used solid-state processes, which are implemented by equilibrating solid samples with solvent vapors and desolvation.

1. M.N. Gabdulkhaev, A.V. Simdyanova, D.N. Bolmatenkov, A.T. Gubaidullin, T.A. Mukhametzyanov, M.A. Ziganshin, V.V. Gorbatchuk // CrystEngComm, 2025, 27, 2490. https://doi.org/10.1039/d5ce00094g

2. M.N. Gabdulkhaev, N.F. Idiyatullina, Kh.R. Khayarov, A.O. Surov, M.A. Ziganshin, V.V. Gorbatchuk // Crystal Growth & Design, 2026, 26, 734. https://doi.org/10.1021/acs.cgd.5c01154

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