

Abstract: A diverse set of 320 compounds from the Procter & Gamble Pharmaceuticals organic compound repository was prepared as 20-mM DMSO solutions and stored at 4 °C under argon in pressurized canisters to simulate a low-humidity environment.

The plates were subjected to 25 freeze/thaw cycles while being exposed to ambient atmospheric conditions after each thaw to simulate the time and manner by which compound plates are exposed to the atmosphere during typical liquid-handling and high-throughput screening processes.

High-performance liquid chromatography-mass spectrometry with evaporative light-scattering detection was used to quantitate the amount of compound remaining after every 5th freeze/thaw cycle. Control plates were stored either at room temperature under argon or at 4 °C under argon without freeze/thaw cycling and were evaluated at the midpoint and the endpoint of the study. The study was conducted over a short time period (i.e., 7 weeks) to minimize the effect of compound degradation over time due to the exposure of the compounds to DMSO. The results from this study will be used to determine the maximum number of freeze/thaw cycles that can be achieved while maintaining acceptable compound integrity.

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Latest compound stability study rebuttals with the following:

“It is likely that a combination of low concentration and limited water uptake will help to minimize sample degradation and precipitation from solution. ¶ Our studies also showed that freeze-thawing is not correlated with sample stability. These last findings are in contrast to previous studies, where we believe that the reported sample instability may have been due to water uptake rather than freeze-thawing.”

Engeloch C., et. al. Stability of Screening Compounds in Wet DMSO. J Biomol Screening (2008), Vol. 13, No. 10, 999-1006.

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