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Development of a video-microscopic method to compare the effect of a precipitation inhibitor

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PURPOSE
The aim of this study was to develop a video-microscopic method to evaluate the effect of a precipitation inhibitor (PI) on supersaturated solutions of the poorly soluble drug tadalafil using a novel small scale setup.

CONCLUSION
• Tadalafil shows a prolonged induction time and a reduced growth rate in presence of HPMC.
• To significantly prolong the induction time and decrease particle growth, 0.01 % w/v HPMC is needed.
• This is a promising tool for evaluating the effect of PI’s on induction time and crystallization rate of supersaturated systems of poorly soluble drugs.

RESULTS
Proof of Concept using the commercial software

Segmentation

Top: Induction time for tadalafil in presence of HPMC
Bottom: The area of one well defined particle per well as a function of time, with different HPMC conc., mean ± SD, n=3-24

Improved Image analysis

Top: Induction time for tadalafil in presence of HPMC
Bottom: The total particle area as a function of time, with different HPMC conc., mean ± SD, n=24

METHOD

1. 30µL 5mg/mL tadalafil in DMSO
2. 200µL FaSSIF
3. oCelloScope System™

Top: Tadalafil in FaSSIF
Bottom: Tadalaf in 0.5% HPMC in FaSSIF

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