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Volume 23, 2018 - Issue 6: Issue Theme: Quality by design, process analytical technology, GMP and regulatory affairs

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Research Article

Real-time imaging as an emerging process analytical technology tool for monitoring of fluid bed coating process

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Pages 596-601 | Received 16 Sep 2016, Accepted 27 Dec 2016, Published online: 22 Feb 2017

 Cite this article  <https://doi.org/10.1080/10837450.2017.1287730>



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Abstract

A direct imaging system (Eyecon™) was used as a Process Analytical Technology (PAT) tool to monitor fluid bed coating process. Eyecon™ generated real-time onscreen images, particle size and shape information of two identically manufactured laboratory-scale batches. Eyecon™ has accuracy of measuring the particle size increase of $\pm 1 \mu\text{m}$ on particles in the size range of 50–3000 μm .

Eyecon™ captured data every 2 s during the entire process. The moving average of D90 particle size values recorded by Eyecon™ were calculated for every 30 min to

calculate the radial coating thickness of coated particles. After the completion of coating process, the radial coating thickness was found to be 11.3 and 9.11 μm , with a standard deviation of ± 0.68 and 1.8 μm for Batch 1 and Batch 2, respectively. The coating thickness was also correlated with percent weight build-up by gel permeation chromatography (GPC) and dissolution. GPC indicated weight build-up of 10.6% and 9.27% for Batch 1 and Batch 2, respectively.

In conclusion, weight build-up of 10% can also be correlated with $10 \pm 2 \mu\text{m}$ increase in the coating thickness of pellets, indicating the potential applicability of real-time imaging as an endpoint determination tool for fluid bed coating process.

Q Keywords: Fluid bed coating process analytical technology real-time imaging pellet size and shape quality by design Eyecon™

Acknowledgements

The authors gratefully acknowledge Innopharma Labs, Ireland, for providing Eyecon™ demonstration unit at Wockhardt Research Center.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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