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European pharma firm's novel study reveals factors impacting pharma formulation flow

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DFE Pharma and Granutools demonstrates the impact of powder properties on the rheological behavior of excipients



DFE Pharma, a global leader in pharmaceutical excipient solutions, is continuously supporting relevant scientific research and innovations in its field.

With the recent publication of a new study demonstrating the impact of powder properties on the rheological behavior of excipients, DFE Pharma together with Belgium-based Granutools gained a deeper mechanistic understanding of factors impacting the flow of a formulation into tableting dies. Though there are many flow characterization techniques, so far only very few have shown to mimic the die filling process successfully.

“One of the challenges in mimicking the die filling process is the impact of rheological powder behavior as a result of differences in flow field in the feeding frame”, comments DFE Pharma’s Pauline Janssen, one of the principal researchers.

“In this study, we investigated the rheological behavior for a wide range of excipients with a wide range of material properties. We introduced a new parameter for rheological behavior, which is a measure for the change in dynamic cohesive index upon changes in flow field”, Janssen adds.

The researchers identified particle size distribution as a main contributing factor to the rheological behavior of powders. The presence of fines between larger particles turned out to reduce the rheological index, which the authors explain by improved particle separation at more dynamic flow fields. This study also revealed that obtained insights on rheological behavior can be used to optimize agitator settings in a tableting machine.