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Processing Methods and Storage Conditions on Chocolate and Coffee Powder Flow Properties

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ABSTRACT

Powders are widely used in a countless number of industries, and are crucial to the quality control of products in areas such as pharmaceuticals and food. Particle physicochemical properties (morphology, solid state – crystalline, amorphous or both) are important factors for powder flow, which in turn can have significant impact on the stability, performance, and presentation of powders. Different processing methods as well as storage conditions such as relative humidity (RH) can drastically affect powder flow. Due to the widespread use of chocolate and coffee powder around the world, and their importance to the food industry, this work investigates two and five different batches of chocolate and coffee powders respectively. To observe the effect of RH on flow, powders were exposed to RHs of 60% and 70% for 24 hours. Powder flow behavior of the powders was determined before and after exposure to the various RH's using the REVOLUTION Powder Analyzer (RPA). The RPA uses a dynamic powder avalanching technique to determine the flow of a powder. The key results include that different processing methods can greatly influence the morphology of powders, which can drastically affect the flow. The results showed that overall the coffee powders when exposed to higher RH the flow rate was reduced. This is may be due to the acquired morphology and solid-state properties after the different powder processing conditions that leads to different behavior. This study demonstrates the impact of storage conditions and processing methods of chocolate and coffee have on the powder flow behavior. This study will help and complement the understanding of the origin of agglomeration when assessing surface interactions.

KEYWORDS

food, powders, flow, properties, processing, storage, humidity, flowability