Title:

Influence of water activity on flow properties of constituent powders in spice mixes

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Abstract: (Your abstract must use **Normal style** and must fit in this box. Your abstract should be no longer than 300 words. The box will 'expand' over 2 pages as you add text/diagrams into it.)

A common industrial problem with powders is their failure to discharge reliably from bins, silos and hoppers as well as their insufficient or unpredictable flow in feeders, dosing and packing machines. These problems occur due to the powder's flow behaviour and often cause adverse interruptions in the production processes. Moreover, different flow properties of constituent powders in mixes may cause variations in mixture homogeneity which in turn may lead to pack weight, performance, sensory properties and quality differentiations of the products.

The present study is focused on the influence of water activity on the flow properties of several spice powders. The determination of the flow properties were carried out with the use of a Powder Flow Tester from Brookfield Engineering Laboratories Inc. which complies with the test procedure ASTM D6128 using the annular and Jenike shear tests techniques. Flowabilities of the powders were characterized with respect to their flow function which was constructed by plotting the unconfined yield strength versus the major principal consolidation stress.

Interesting results regarding the influence of water content on flow behavior of both the constituent spice powders and their mixtures were acquired from this study. By increasing the water content the cohesiveness of some spices increased significantly while on some other spices it did not seem to have any impact. The corresponding mixtures of spices didn't follow a linear correlation with the ratio content and the flow properties of the constituent powders.