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Understanding the shear and extensional properties of pomace-fibre suspensions prior to the spray drying process

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1 **Understanding the shear and extensional properties of pomace-fibre suspensions prior**
2 **to the spray drying process**

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13 **Abstract**

14 Pomace fibre is the left-over plant from juice processing which has several health-promoting
15 properties. Fibre has potentially been recognized as a drying aid in the spray drying of fruit
16 juice. In the present work, shear and extensional properties of different fibre suspensions
17 were assessed and compared. Unlike fruit juice, which displays Newtonian behaviour, fibre
18 suspensions exhibit shear thinning behaviour with dependence on the fibre fraction and
19 aspect ratio and significant extensional properties as measured with a capillary break-up
20 rheometer. The extensional properties of the fibre suspensions make it more difficult to
21 atomize them. This study shows the importance of assessing both shear and extensional
22 properties of fibre suspensions before incorporating them in spray drying.

23

24 **Keywords:** extensional rheology; fibre suspensions; pomace fibres; shear rheology

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