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Assessment of rheological and microstructural changes of soluble fiber from chia seeds during an in vitro micro-digestion

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2 chia seeds during an in vitro micro-digestion

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Abstract

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10 The ability of some dietary fiber to increase the viscosity of digestive content may be associated with important positive implications in human health. An in vitro micro-11 digestion device was implemented to simulate and visualize the digestion of mucilage 12 from chia seed. Changes in microstructure in situ and apparent viscosity were 13 evaluated in 3, 5 and 8 g/kg concentrations of mucilage in three different digestions. 14 The mucilage had a high-water holding capacity, approximately 35.2 ± 1.1 g water/g 15 mucilage. As the digestion processes progressed, the microstructure of the digesta 16 17 changed from a compact sponge-like structure, with small pores forming an irregular network with average pore size of 20.68 \pm 6.51; 40.90 \pm 7.45 and 15.50 \pm 6.07 microns 18 to 3, 5 and 8 g/kg concentrations respectively, to a slightly less compact with average 19 20 pore size that varies from 19.87 ± 7.00 microns in digestion 1 to 29.79 ± 15.47 microns in digestion 3. 21 22 A slight reduction in viscosity during the digestion process was observed; this behavior 23 suggests that mucilage could maintain its structure in a food matrix and could be used

to develop structured foods. Mucilage from chia seeds could be a potential functional

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27 Keywords: chia seed, *Salvia hispanica L.*, mucilage, in vitro digestion.

ingredient with valuable attributes for food and nutraceutical industries.

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