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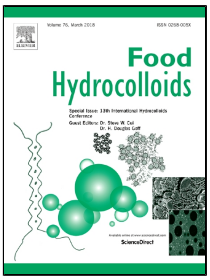

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PII:	S0268-005X(17)32013-1
DOI:	10.1016/j.foodhyd.2018.01.013
Reference:	FOOHYD 4227
To appear in:	*Food Hydrocolloids*
Received Date:	01 December 2017
Revised Date:	12 January 2018
Accepted Date:	14 January 2018

Please cite this article as: Saeed Mirarab Razi, Ali Motamedzadegan, Ahmad Shahidi, Ali Rashidinejad, The effect of basil seed gum (BSG) on the rheological and physicochemical properties of heat-induced egg albumin gels, *Food Hydrocolloids* (2018), doi: 10.1016/j.foodhyd.2018.01.013

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ACCEPTED MANUSCRIPT

The effect of basil seed gum (BSG) on the rheological and physicochemical properties of heat-induced egg albumin gels

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Abstract

This investigation demonstrates the effect of basil seed gum (BSG) on the rheological and physicochemical characteristics of egg albumin gels. The mixtures of egg albumin (4%, w/v) and BSG (0, 0.05, 0.1 and 0.3%, w/v) were heated at 75 °C for 30 min to form heat-induced gels. A shear thinning behaviour for all of the gels was observed and the increase in BSG concentration, from 0.05% to 0.3%, increased the apparent viscosity of the gels at the constant shear rate of 50 s^{-1}. Results of amplitude test showed that G' was greater than G'' at low frequency, while they crossed over each other in the middle of the strain range. G'_{LVE}, G''_{LVE}, τ_f, γ_c, τ_y, and $G'_{s(n\text{-}LVE)}$ of the gel samples increased with the increase in BSG concentration. The frequency sweep data showed that G' modulus was greater than G'' modulus in all of the frequency ranges with no crossover. All of the samples deviated from Cox-Merz law, confirming their gel-like behaviour. A linear increase of loss and storage modulus was observed during cooling the samples from 85 to 5 °C. FTIR spectra demonstrated some major shifts, such as in the region of 800-1200 cm^{-1}, related to C-O and C-O-C band stretching. The hardness of the gels increased as a result of the increase

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