Structural and digestibility properties of infrared heat-moisture treated maize starch complexed with stearic acid

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Supplementary Table 1: Effects of heat-moisture treatment by infrared energy on the thermal properties of maize starch pastes with and without stearic acid

	Treatment		Uncomplexed stearic acid peak				Type I peak				Type IIa peak				Type IIb peak			
	Hydrothermal treatment	Stearic acid (%w/w)	To (°C)	Tp (°C)	Tc (°C)	ΔH (J/g)	To (°C)	Tp (°C)	Tc (°C)	ΔH (J/g)	To (°C)	Tp (°C)	Tc (°C)	ΔH (J/g)	To (°C)	Tp (°C)	Tc (°C)	ΔH (J/g)
Short pasted	None		ND	ND	ND	ND	97a ± 0.1	105ab ± 0.1	109a ± 0.1	0.17a ± 0.06	ND	ND	ND	ND	ND	ND	ND	ND
	Conventional HMT	0	ND	ND	ND	ND	96a ± 0.4	104a ± 0.5	108a ± 0.1	0.25b ± 0.07	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 1 h	0	ND	ND	ND	ND	97a ± 0.2	103a ± 0.1	107a ± 1.3	0.21b ± 0.04	103a ± 0.2	107a ± 0.1	110a ± 1.3	0.3a ± 0.1	ND	ND	ND	ND
	Infrared HMT 2 h	0	ND	ND	ND	ND	101b ± 0.0	106b ± 0.1	110b ± 1.4	0.25b ± 0.03	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 3 h	0	ND	ND	ND	ND	101b ± 0.0	106b ± 0.7	110b ± 0.9	0.25b ± 0.02	ND	ND	ND	ND	ND	ND	ND	ND
	None	1.5	67a ± 0.4	70a ± 0.3	73a ± 0.5	0.1a ± 0.1	99ab ± 1.2	103a ± 0.12	109ab ± 1	0.59c ± 0.09	ND	ND	ND	ND	ND	ND	ND	ND
	Conventional HMT 16h	1.5	ND	ND	ND	ND	96a ± 0.4	103a ± 0.7	109ab ± 0.4	0.55c ± 0.01	110b ± 0.1	113b ±1.2	117b ± 0.9	0.33a ± 0.01	118a ± 0.03	120a ± 0.1	125a ± 0.02	0.1a ± 0
	Infrared HMT 1 h	1.5	ND	ND	ND	ND	97a ± 0.5	107b ± 0.3	110b ± 0.3	0.5c ± 0.06	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 2 h	1.5	ND	ND	ND	ND	97a ± 0.1	107b ± 0.1	109ab ± 1.2	0.54c ± 0.05	ND	ND	ND	ND	120ab ± 0.1	124b ± 0.8	128b ± 0.1	1.2b ± 0.01
	Infrared HMT 3 h	1.5	ND	ND	ND	ND	100ab ± 0.2	108b ± 0.9	111b ± 0.7	0.53c ± 0.03	ND	ND	ND	ND	120ab ± 0.1	124b ± 1.5	129b ± 0.3	1.3b ± 0.04

Long pasted	None	0	ND	ND	ND	ND	99aa ± 1.3	106a ± 0.9	109a ± 0.8	0.21a ± 0.07	ND	ND	ND	ND	ND	ND	ND	ND
	Conventional HMT	0	ND	ND	ND	ND	99a ± 0.9	106a ± 1.1	110a ± 0.7	0.43b ± 0.04	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 1 h	0	ND	ND	ND	ND	99a ± 0.9	107a ± 0.7	110a ± 0.7	0.49b ± 0.09	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 2 h	0	ND	ND	ND	ND	98a ± 1.1	107a ± 0.9	110a ± 0.2	0.50bc ± 0.1	ND	ND	ND	ND	ND	ND	ND	ND
	Infrared HMT 3 h	1.5	ND	ND	ND	ND	99a ± 0.8	107a ± 0.9	110a ± 0.7	0.56c ± 0.03	ND	ND	ND	ND	ND	ND	ND	ND
	None	1.5	ND	ND	ND	ND	ND	ND	ND	ND	109a ± 1.1	112a ± 0.8	115a ± 1.3	0.41a ± 0.06	117a ± 0.9	120a ± 1.2	126ab ± 0.9	1.1b ± 0.07
	Conventional HMT 16h	1.5	ND	ND	ND	ND	99a ± 0.3	107a ± 1.1	110a ± 0.7	0.37ab ± 0.03	117b ± 0.9	120b ± 1.2	126b ± 0.9	0.44a ± 0.07	124b ± 0.9	130bc ± 1.2	136c ± 0.9	1.1bc ± 0.07
	Infrared HMT 1 h	1.5	ND	ND	ND	ND	99a ± 0.4	107a ± 1.3	110a ± 0.3	0.64d ± 0.03	ND	ND	ND	ND	127b ± 0.9	130bc ± 1.2	136c ± 0.9	1.5bc ± 0.07
	Infrared HMT 2 h	1.5	ND	ND	ND	ND	99a ± 0.4	107a ± 1.3	110a ± 0.6	0.63d ± 0.03	ND	ND	ND	ND	137c ± 0.9	139d ± 1.2	142d ± 0.9	1.5bc ± 0.07
	Infrared HMT 3 h	0	ND	ND	ND	ND	99a ± 0.4	107a ± 0.9	110a ± 0.9	0.63d ± 0.03	ND	ND	ND	ND	137c ± 0.9	139d ± 1.2	142d ± 0.9	1.5bc ± 0.07

*shows a statistically significant interactive effect between stearic acid and heat-moisture treatment; Means with the same letter are not significantly different at P<0.05; Conventional HMT represents maize starch conventionally heat-moisture treated at 110°C for 16hrs, and 25% moisture content; Infrared HMT 1h represents maize starch heat-moisture treated at 1000W infrared power for 1 h with 25% moisture content;; Infrared HMT 2h represents maize starch heat-moisture treated at 1000W infrared power for 2 h with 25% moisture content; Infrared HMT 3h represents maize starch heat-moisture treated at 1000W infrared power for 3 h with 25% moisture content