

SUPPLEMENTARY MATERIAL

Liquid Hot Water Pretreatment and Enzymatic Hydrolysis as a Valorization Route of Italian Green Pepper Waste to Delivery Free Sugars

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Tables S1, S2, S3, S4, S5 and S6 apply a multiple comparison procedure to determine which means are significantly different from which others. Although there are several multiple comparison procedures, the Fisher's least significant difference (LSD) procedure has been chosen in this work. In Tables S1, S2 and S3, within each column, the levels containing X's form a group of means within which there are no statistically significant differences. With this method, there is a 5.0% risk of calling each pair of means significantly different when the actual difference equals 0. Tables S4, S5 and S6 show the estimated difference between each pair of means. An asterisk has been placed to indicate that these pairs show statistically significant differences at the 95.0% confidence level.

Table 1. Multiple range tests for glucose % by temperature, time and pre-treatment (Method 95.0 percent LSD).

		Count	LS Mean	LS Sigma	Homogeneous Groups	
Glucose, %	Temperature	No pre-treatment	3	20.3	6.09899	X
		150 °C	6	22.53	4.31264	X
		165 °C	6	35.2967	4.31264	XX
		180 °C	6	47.79	4.31264	X
	Time	No pre-treatment	3	20.3	6.26152	X
		10 min	9	25.5033	3.61509	X
		40 min	9	44.9067	3.61509	X
		150 °C, 10 min	3	17.2	0.4693	X
	Pre-treatment	No pre-treatment	3	20.3	0.4693	X
		165 °C, 10 min	3	24.75	0.4693	X
		150 °C, 40 min	3	27.86	0.4693	X
		180 °C, 10 min	3	34.56	0.4693	X
		165 °C, 40 min	3	45.84	0.4693	X
		180 °C, 40 min	3	61.02	0.4693	X

Table S1. Multiple range tests for xylose % and phenolic compounds concentration, mg/L by temperature, time and pre-treatment (Method 95.0 percent LSD).

		Count	LS Mean	LS Sigma	Homogeneous Groups	
Xylose, %	Temperature	No pre-treatment	3	8.58	2.57651	X
		150 °C	6	11.27	1.82187	XX
		165 °C	6	15.96	1.82187	XX
		180 °C	6	19.88	1.82187	X
	Time	No pre-treatment	3	8.58	2.25465	X
		10 min	9	11.71	1.30172	X
		40 min	9	19.6967	1.30172	X
	Pre-treatment	No pre-treatment	3	8.58	0.365481	X
		150 °C, 10 min	3	8.6	0.365481	X
		165 °C, 10 min	3	12.89	0.365481	X
		180 °C, 10 min	3	13.64	0.365481	X
		150 °C, 40 min	3	13.94	0.365481	X
165 °C, 40 min		3	19.03	0.365481	X	
		180 °C, 40 min	3	26.12	0.365481	X

Table S3. Multiple range tests for phenolic compounds concentration, mg/L by temperature, time and pre-treatment (Method 95.0 percent LSD).

		Count	LS Mean	LS Sigma	Homogeneous Groups	
Phenolic compound concentration, mg/L	Temperature	150 °C	6	76.3	1.35515	X
		180 °C	6	77.97	1.35515	X
		165 °C	6	80.085	1.35515	X
	Time	No pre-treatment	3	605.57	1.91647	X
		10 min	9	75.8767	0.929761	X
		40 min	9	80.36	0.929761	X
	Pre-treatment	No pre-treatment	3	605.57	1.61039	X
		180 °C, 40 min	3	69.12	1.25141	X
		150 °C, 10 min	3	72.24	1.25141	XX
		180 °C, 10 min	3	75.58	1.25141	XX
		165 °C, 40 min	3	77.44	1.25141	XX
		165 °C, 10 min	3	79.81	1.25141	X
		150 °C, 40 min	3	80.36	1.25141	X
		No pre-treatment	3	605.57	1.25141	X

Table S4. Contrasts for glucose % by temperature, time and pre-treatment (Method 95.0 percent LSD).

	Contrast	Sig.	Difference	+/- Limits	
Glucose, %	No pre-treatment – 150 °C		-2.23	15.7597	
	No pre-treatment – 165 °C		-14.995	15.7597	
	Temperature	No pre-treatment – 180 °C	*	-27.49	15.7597
		150 °C – 165 °C		-12.7667	12.8678
		150 °C – 180 °C	*	-25.26	12.8678
		165 °C – 180 °C		-12.4933	12.8678
	Time	No pre-treatment – 10 min		-5.20333	15.1901
		No pre-treatment – 40 min	*	-24.6067	15.1901
		10 min – 40 min	*	-19.4044	10.741
	Pre-treatment	No pre-treatment – 150 °C, 10 min	*	3.1	1.42348
		No pre-treatment – 150 °C, 40 min	*	-7.56	1.42348
		No pre-treatment – 165 °C, 10 min	*	-4.45	1.42348
		No pre-treatment – 165 °C, 40 min	*	-25.54	1.42348
		No pre-treatment – 180 °C, 10 min	*	-14.26	1.42348
		No pre-treatment – 180 °C, 40 min	*	-40.72	1.42348
		150 °C, 10 min – 150 °C, 40 min	*	-10.66	1.42348
		150 °C, 10 min – 165 °C, 10 min	*	-7.55	1.42348
		150 °C, 10 min – 165 °C, 40 min	*	-28.64	1.42348
		150 °C, 10 min – 180 °C, 10 min	*	-17.36	1.42348
		150 °C, 10 min – 180 °C, 40 min	*	-43.82	1.42348
		150 °C, 40 min – 165 °C, 10 min	*	3.11	1.42348
		150 °C, 40 min – 165 °C, 40 min	*	-17.98	1.42348
		150 °C, 40 min – 180 °C, 10 min	*	-6.7	1.42348
		150 °C, 40 min – 180 °C, 40 min	*	-33.16	1.42348
		165 °C, 10 min – 165 °C, 40 min	*	-21.09	1.42348
		165 °C, 10 min – 180 °C, 10 min	*	-9.81	1.42348
		165 °C, 10 min – 180 °C, 40 min	*	-36.27	1.42348
		165 °C, 40 min – 180 °C, 10 min	*	11.28	1.42348
165 °C, 40 min – 180 °C, 40 min		*	-15.18	1.42348	
180 °C, 10 min – 180 °C, 40 min	*	-26.46	1.42348		

Table S5. Contrasts for xylose % by temperature, time and pre-treatment (Method 95.0 percent LSD).

	Contrast	Sig.	Difference	+/- Limits	
Xylose, %	No pre-treatment – 150 °C		-2.69	6.65768	
	No pre-treatment – 165 °C	*	-7.38	6.65768	
	Temperature	No pre-treatment – 180 °C	*	-11.3	6.65768
		150 °C – 165 °C		-4.69	5.43597
		150 °C – 180 °C	*	-8.61	5.43597
		165 °C – 180 °C		-3.92	5.43597
	Time	No pre-treatment – 10 min		-3.13	5.46966
		No pre-treatment – 40 min	*	-11.1167	5.46966
		10 min – 40 min	*	-7.98667	3.86763
	Pre-treatment	No pre-treatment – 150 °C, 10 min		-0.02	1.10857
		No pre-treatment – 150 °C, 40 min	*	-5.36	1.10857
		No pre-treatment – 165 °C, 10 min	*	-4.31	1.10857
		No pre-treatment – 165 °C, 40 min	*	-10.45	1.10857
		No pre-treatment – 180 °C, 10 min	*	-5.06	1.10857
		No pre-treatment – 180 °C, 40 min	*	-17.54	1.10857
		150 °C, 10 min – 150 °C, 40 min	*	-5.34	1.10857
		150 °C, 10 min – 165 °C, 10 min	*	-4.29	1.10857

150 °C, 10 min – 165 °C, 40 min	*	-10.43	1.10857
150 °C, 10 min – 180 °C, 10 min	*	-5.04	1.10857
150 °C, 10 min – 180 °C, 40 min	*	-17.52	1.10857
150 °C, 40 min – 165 °C, 10 min		1.05	1.10857
150 °C, 40 min – 165 °C, 40 min	*	-5.09	1.10857
150 °C, 40 min – 180 °C, 10 min		0.3	1.10857
150 °C, 40 min – 180 °C, 40 min	*	-12.18	1.10857
165 °C, 10 min – 165 °C, 40 min	*	-6.14	1.10857
165 °C, 10 min – 180 °C, 10 min		-0.75	1.10857
165 °C, 10 min – 180 °C, 40 min	*	-13.23	1.10857
165 °C, 40 min – 180 °C, 10 min	*	5.39	1.10857
165 °C, 40 min – 180 °C, 40 min	*	-7.09	1.10857
180 °C, 10 min – 180 °C, 40 min	*	-12.48	1.10857

Table S6. Contrasts for phenolic compounds concentration, mg/L by temperature, time and pre-treatment (Method 95.0 percent LSD).

	Contrast	Sig.	Difference	+/- Limits	
Phenolic compounds concentration, mg/L	No pre-treatment – 150 °C	*	529.27	4.95215	
	No pre-treatment – 165 °C	*	525.485	4.95215	
	No pre-treatment – 180 °C	*	527.6	4.95215	
	150 °C – 165 °C		-3.785	4.04341	
	150 °C – 180 °C		-1.67	4.04341	
	165 °C – 180 °C		2.115	4.04341	
	Time	No pre-treatment – 10 min	*	529.693	3.90672
		No pre-treatment – 40 min	*	525.21	3.90672
		10 min – 40 min	*	-4.48333	2.76247
	Pre-treatment	No pre-treatment – 150 °C, 10 min	*	533.33	3.79576
		No pre-treatment – 150 °C, 40 min	*	525.21	3.79576
		No pre-treatment – 165 °C, 10 min	*	525.76	3.79576
		No pre-treatment – 165 °C, 40 min	*	528.13	3.79576
		No pre-treatment – 180 °C, 10 min	*	529.99	3.79576
		No pre-treatment – 180 °C, 40 min	*	536.45	3.79576
150 °C, 10 min – 150 °C, 40 min		*	-8.12	3.79576	
150 °C, 10 min – 165 °C, 10 min		*	-7.57	3.79576	
150 °C, 10 min – 165 °C, 40 min		*	-5.2	3.79576	
150 °C, 10 min – 180 °C, 10 min			-3.34	3.79576	
150 °C, 10 min – 180 °C, 40 min			3.12	3.79576	
150 °C, 40 min – 165 °C, 10 min			0.55	3.79576	
150 °C, 40 min – 165 °C, 40 min		2.92	3.79576		
150 °C, 40 min – 180 °C, 10 min	*	4.78	3.79576		
150 °C, 40 min – 180 °C, 40 min	*	11.24	3.79576		
165 °C, 10 min – 165 °C, 40 min		2.37	3.79576		
165 °C, 10 min – 180 °C, 10 min	*	4.23	3.79576		
165 °C, 10 min – 180 °C, 40 min	*	10.69	3.79576		
165 °C, 40 min – 180 °C, 10 min		1.86	3.79576		
165 °C, 40 min – 180 °C, 40 min	*	8.32	3.79576		
180 °C, 10 min – 180 °C, 40 min	*	6.46	3.79576		