Supplementary data

Effects on the Quality and Health-Enhancing Properties of Wheat Bread of the Addition of Industrial Onion Waste Powder

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Table 1S Sensory evaluation of bread with different levels of IOWP

Attribute	Substitution levels, %					
	0	1	2	3	4	5
Shape	7.4±1.2^{a}	7.2±0.4^{ab}	6.8±0.5^{bc}	6.4±0.5^{c}	4.6±0.6^{d}	2.0±0.9^{e}
Crust color	7.8±0.4^{a}	7.2±0.4^{b}	7.0±0.7^{b}	6.6±0.8^{b}	5.6±0.6^{c}	4.6±1.6^{d}
Crumb color	7.6±1.4^{a}	7.4±0.5^{a}	6.4±0.5^{b}	5.8±0.5^{c}	3.6±0.6^{d}	2.8±0.8^{e}
Aroma	8.2±0.8^{a}	7.2±0.4^{b}	6.2±1.4^{c}	5.8±0.4^{c}	4.0±0.8^{d}	3.0±0.6^{e}
Uniformity of porosity	8.2±1.2^{a}	8.0±0.4^{a}	7.0±0.8^{b}	7.0±0.8^{b}	6.0±0.9^{c}	4.8±1.0^{d}
Chewability	8.4±0.5^{a}	7.8±0.5^{b}	7.6±0.5^{bc}	7.0±1.1^{c}	5.0±1.1^{d}	4.8±1.0^{d}
Taste	8.4±0.5^{a}	8.0±0.6^{a}	7.4±0.6^{b}	7.2±0.5^{b}	5.0±0.4^{c}	4.8±0.8^{c}
Aftertaste	0.0±0.0^{a}	2.2±2.7^{b}	2.4±1.8^{b}	2.8±1.3^{b}	4.0±0.6^{c}	5.0±0.9^{c}
Overall acceptability	7.8±0.4^{a}	7.4±1.1^{ab}	7.2±0.7^{b}	7.0±0.6^{b}	4.8±0.4^{c}	4.0±0.5^{d}

The data are means ± standard deviation of three independent measurements. Values within rows followed by different letters (a to e) differ significantly from each other ($p < 0.05$)

Table 2S Dietary fiber composition of IOWP (according to Prokopov et al. 2018) and bread with different levels of additive

Samples	SDF, g/100g dw	IDF, g/100g dw	TDF, g/100g dw
IOWP	9.21±0.08[a]	60.52±0.13[a]	69.73±0.21[a]
Control	0.41±0.01[b]	1.38±0.10[b]	1.79±0.10[b]
OW1	0.45±0.02[b]	1.53±0.10[b]	1.98±0.10[b]
OW2	0.68±0.01[c]	2.57±0.20[c]	3.25±0.20[c]
OW3	0.87±0.03[d]	3.89±0.10[d]	4.76±0.10[d]
OW4	1.11±0.05[e]	4.92±0.30[e]	6.03±0.30[e]
OW5	1.24±0.02[f]	5.91±0.20[f]	7.15±0.20[f]

The data are means ± standard deviation of three independent measurements. Values within column followed by different letters (a to f) differ significantly from each other ($p < 0.05$)

Table 3S Total phenolic content (TPC), total flavonoids and antioxidant activity of IOWP (according to Prokopov et al. 2018) and bread with different levels of additive

Samples	TPC, mg GAE/g dw	Total flavonoids, mg QE/g dw	Antioxidant activity	
			DPPH, mM TE/g dw	FRAP, mM TE/g dw
IOWP	41.04±1.22[a]	20.44±1.22[a]	490.54±9.43[a]	114.05±8.04[a]
Control	0.49±0.05[b]	n.d.	0.16±0.10[b]	0.70±0.10[b]
OW1	0.62±0.04[c]	0.26±0.02[b]	1.00±0.10[c]	2.12±0.13[c]
OW2	1.02±0.05[d]	0.57±0.05[c]	1.49±0.07[d]	3.40 ±0.07[d]
OW3	1.24±0.05[e]	0.76±0.03[d]	2.08±0.10[e]	4.33±0.20[e]
OW4	1.58±0.01[f]	1.38±0.04[e]	2.81±0.09[f]	5.27±0.05[f]
OW5	1.64±0.02[f]	1.68±0.02[f]	2.66±0.11[g]	5.41±0.10[g]

The data are means ± standard deviation of three independent measurements. Values within column followed by different letters (a to g) differ significantly from each other ($p < 0.05$). Not detected – n.d.

TPC total phenolic content

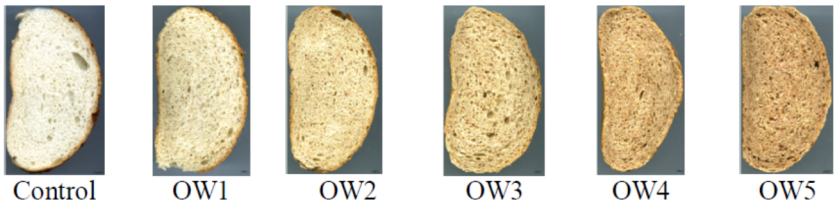

Fig. 1S Crumb slice images used for image analysis of breads with different levels of IOWP (Control: 0% IOWP; OW1: 1% IOWP; OW2: 2% IOWP; OW3: 3% IOWP; OW4: 4% IOWP; OW5: 5% IOWP)