Impact of Four Different Chlorella vulgaris Strains on the Properties of Durum Wheat Semolina Pasta

Marie-Christin Baune 1, Thomas Lickert 1, Frank Schilling 1, Ute Bindrich 1, Igor Tomasevic 2, Volker Heinz 1, Sergiy Smetana 1 and Nino Terjung 1,*

1 DIL German Institute of Food Technologies e.V., Prof.-von-Klitzing-Str. 7, 49610 Quakenbrück, Germany;
m.baune@dil-ev.de (M.-C.B.); t.lickert@dil-ev.de (T.L.); f.schilling@dil-ev.de (F.S.);
u.bindrich@dil-ev.de (U.B.); v.heinz@dil-ev.de (V.H.); s.smetana@dil-ev.de (S.S.)

2 Faculty of Agriculture, University of Belgrade, 11080 Belgrade, Serbia; tbigor@agrif.bg.ac.rs

* Correspondence: n.terjung@dil-ev.de; Tel.: +49-(0)-5431-183-319

Table S1, Approximate composition of the dry pasta based on calculation.

Parameter (g/100 g)	Control	3% SCV	5% SCV	3% HCV	5% HCV	3% WCV	5% WCV	3% NHCV	5% NHCV
Protein	11.22	11.58	11.87	11.81	12.21	12.01	12.40	11.91	12.40
Fat	1.43	1.58	1.70	1.74	1.94	1.62	1.73	1.71	1.90
Carbohydrates incl. DF	73.56	72.43	72.05	72.95	72.58	72.99	71.75	72.90	72.65
thereof DF	*3.16*	*> 3.16 [1]*	*> 3.16 [1]*	*3.46*	*3.66*	*> 3.16 [1]*	*> 3.16 [1]*	*3.47*	*3.68*
Ash	-	> 0.12	> 0.20	> 0.06	> 0.10	> 0.14	> 0.23	> 0.06	> 0.11
Moisture	10.24	10.80	10.79	9.84	9.81	9.61	10.53	9.86	9.45
Energy (kcal/100 g)	345.68	344.21	345.00	347.77	349.32	348.47	346.20	347.63	349.89
Energy from protein (%)	12.99	13.46	13.76	13.59	13.98	13.79	14.32	13.70	14.17

[1] The results cannot be clearly presented as dietary fiber was not differentiated from carbohydrates in the certificate of analysis. However, the fiber content of the specifications (SCV, > 20 g/100 g; WCV, 16 - 30 g/100 g) clearly exceeds that of durum wheat semolina, so that a higher value can be assumed than for the control).
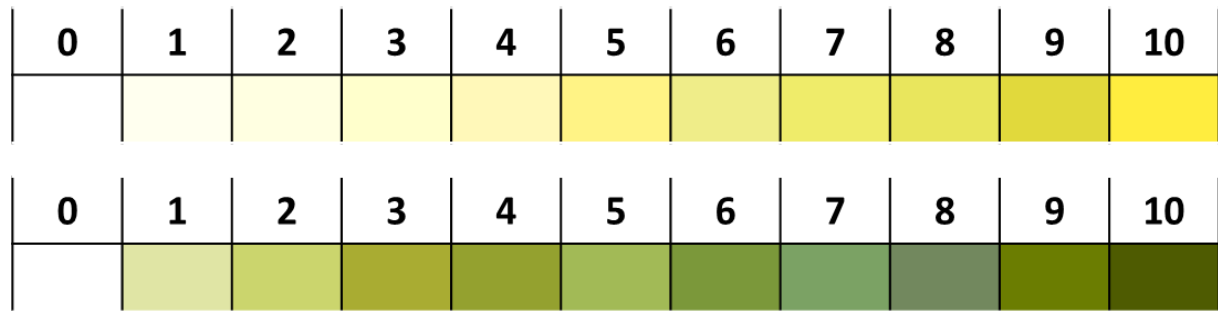
DF, dietary fiber; HCV, Honey *Chlorella vulgaris*; NHCV, New Honey *Chlorella vulgaris*; SCV, Smooth *Chlorella vulgaris*; WCV, White *Chlorella vulgaris*
Values were calculated based on the ingredient's composition (Table 1) and moisture content after drying (Table 2). Energy values were calculated based on regulation (EU) 1169/2011.

Table S2, Multiple logistic regression analysis of the sensory data.

| Ind. variable	Coefficient	SE	Wald stat.	*P-value*
Constant	-2.499	1.926	1.683	0.195
Typical odor	**0.622**	0.224	7.686	**0.006****
Fishy/off-odor	0.120	0.207	0.336	0.562
After/off-taste	-0.130	0.181	0.515	0.473
Saltiness	**-0.487**	0.199	6.029	**0.014***
Bite resistance	-0.042	0.182	0.054	0.816
Stickiness	0.141	0.147	0.928	0.335
Color	0.256	0.191	1.786	0.181

Significance codes: ** $\leq$ 0.01, * < 0.05. n = 99. Pearson Chi-square Statistic: 105.547 (p = 0.126). Likelihood ratio test statistic: 35.768 (p = <0.001). -2*Log(Likelihood) = 99.193. Hosmer-Lemeshow statistic: 10.271 (p = 0.247). No multicollinearity was found (Threshold = variance inflation factor 2.942). SE, standard error. Bold values indicate significant coefficients.

Figure S1, Color scales used for the evaluation of the attribute "color" in the QDA sessions. The yellow scale (top) was used for the control, HCV, WCV and NHCV samples. The green scale (bottom) was used for the SCV samples. During data analysis, 10 was added to the green values to emphasize the difference to the yellow pasta/scale.
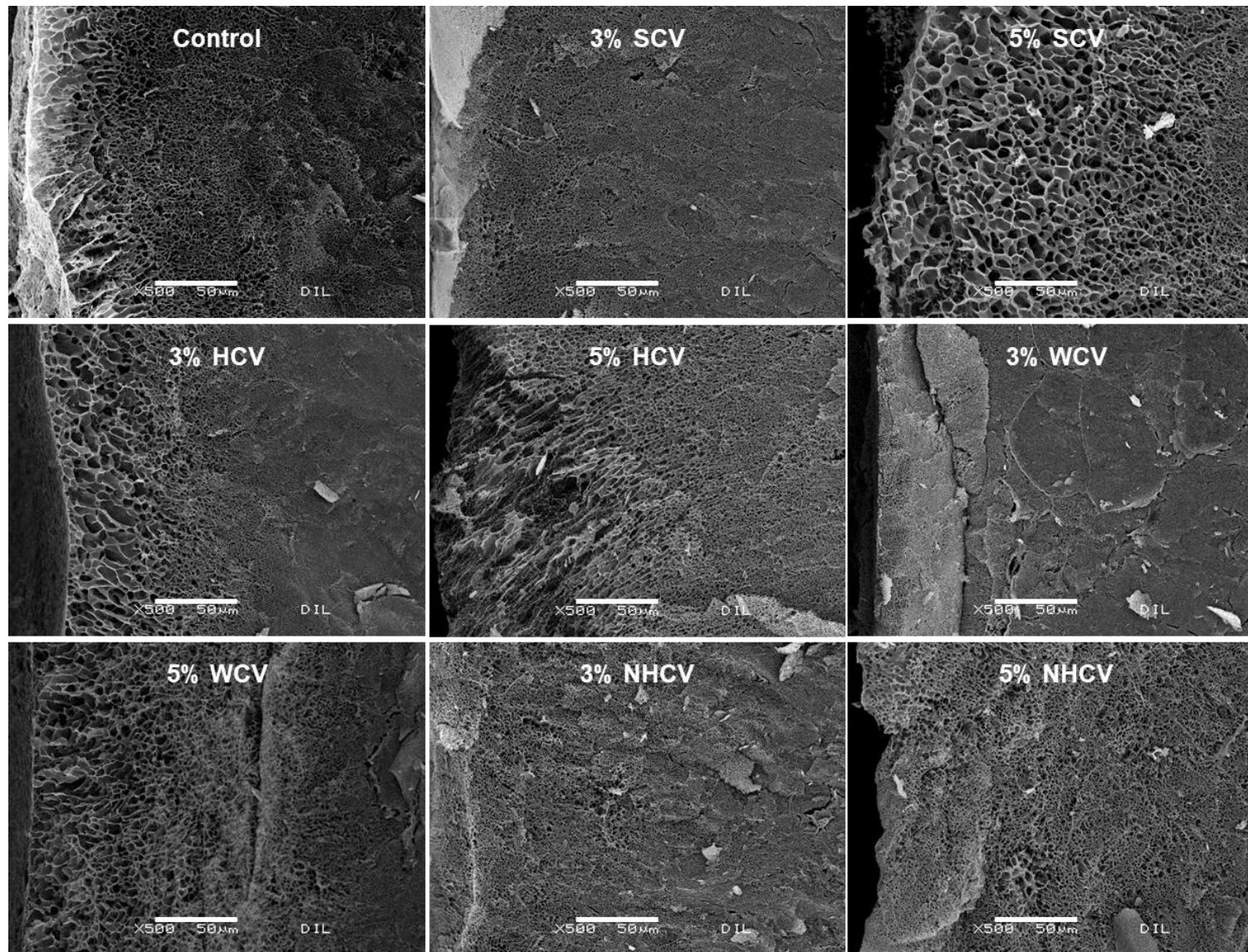
Figure S2, Cross-section of the cooked lasagna sheets from the outside to the inside (the left edge corresponds to the top/bottom of the lasagna sheet) at 500x magnification. Bars 50 μm. HCV, Honey *Chlorella vulgaris*; NHCV, New Honey *Chlorella vulgaris*; SCV, Smooth *Chlorella vulgaris*; WCV, White *Chlorella vulgaris*.
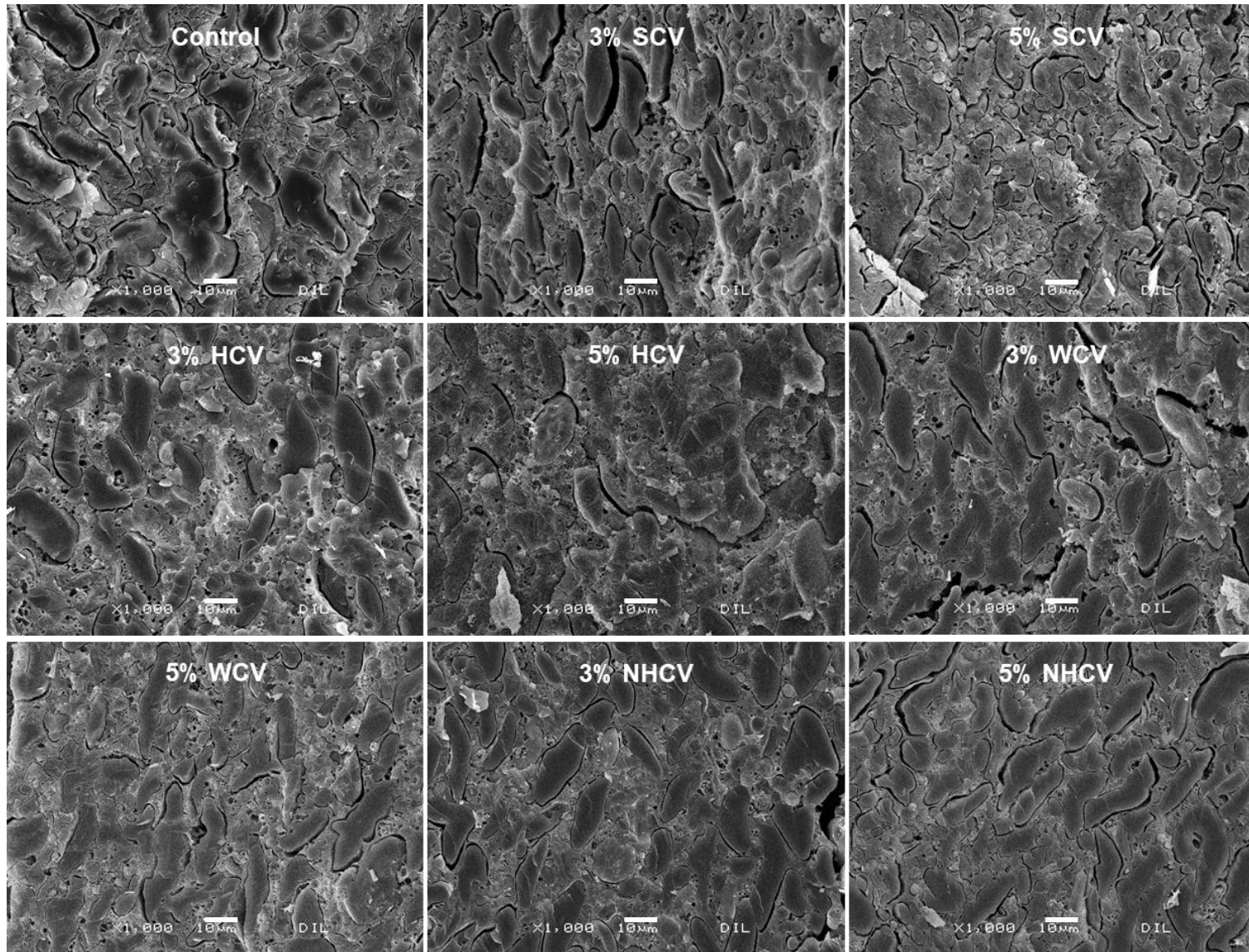
Figure S3, Cross-section of the cooked lasagna sheets close to the center at 1000x magnification. Bars 10 μm. HCV, Honey *Chlorella vulgaris*; NHCV, New Honey *Chlorella vulgaris*; SCV, Smooth *Chlorella vulgaris*; WCV, White *Chlorella vulgaris*.