Supplementary Materials:

Figures

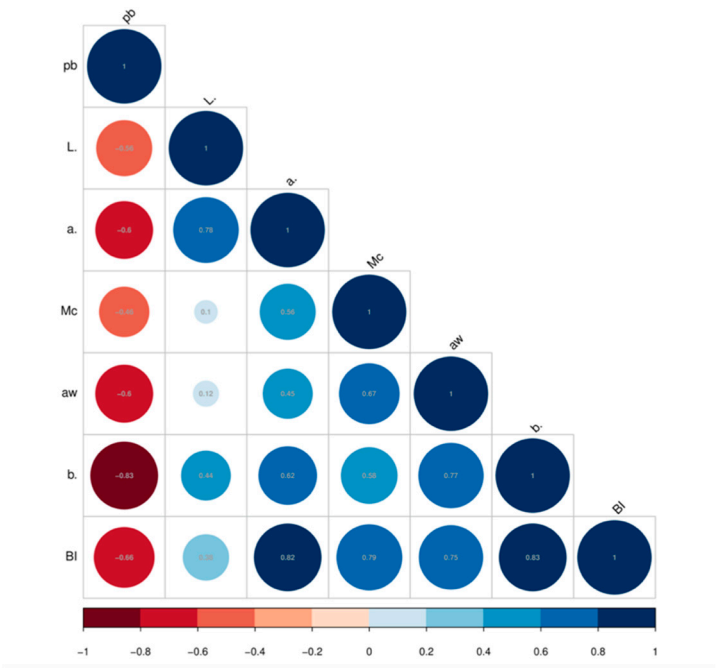

Figure S1. A correlation matrix showing the Pearson's correlation coefficients between each pair of variables (i.e., physical properties) in chokeberry pomace extract powders data set (controls and powders with carrier addition). The shape and colour intensity of the circle/ellipses displayed in the lower triangular part of a correlation matrix are proportional to the strength and direction of a linear relationship between any two variables. The highest correlation coefficients (shown as a thin ellipse) are considered as important, whereas the smallest correlation coefficients that reflect the weak linear relationship between the two variables are considered as insignificant and indicated as big circles. Positive correlations are marked in blue, while negative correlations in red colour. The values of the corresponding correlation coefficients expressed in numerical forms are shown in the upper triangular part of this correlation matrix.

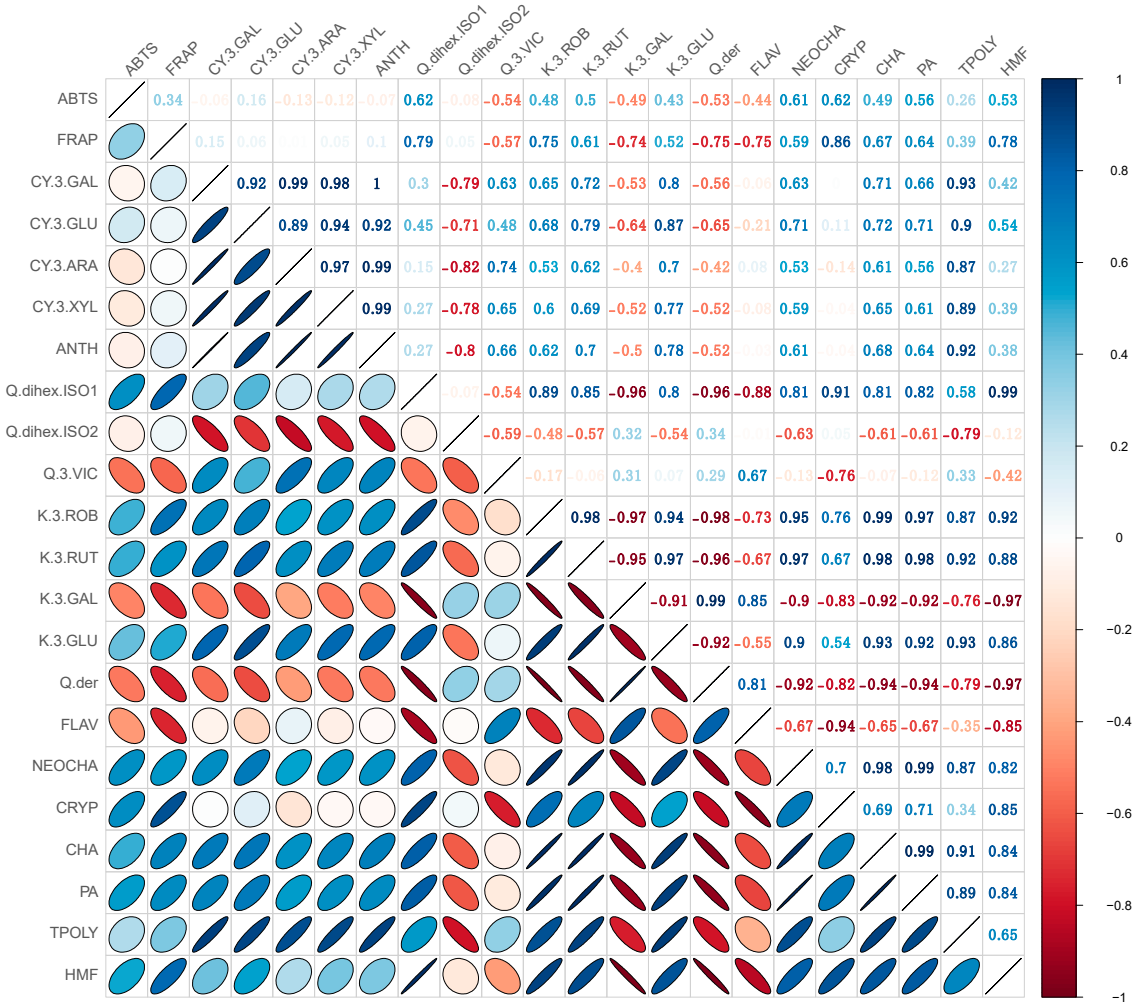

Figure S2. A correlation matrix showing the Pearson's correlation coefficients between each pair of variables (i.e., chemical properties) in chokeberry pomace extract powders data set (control samples).

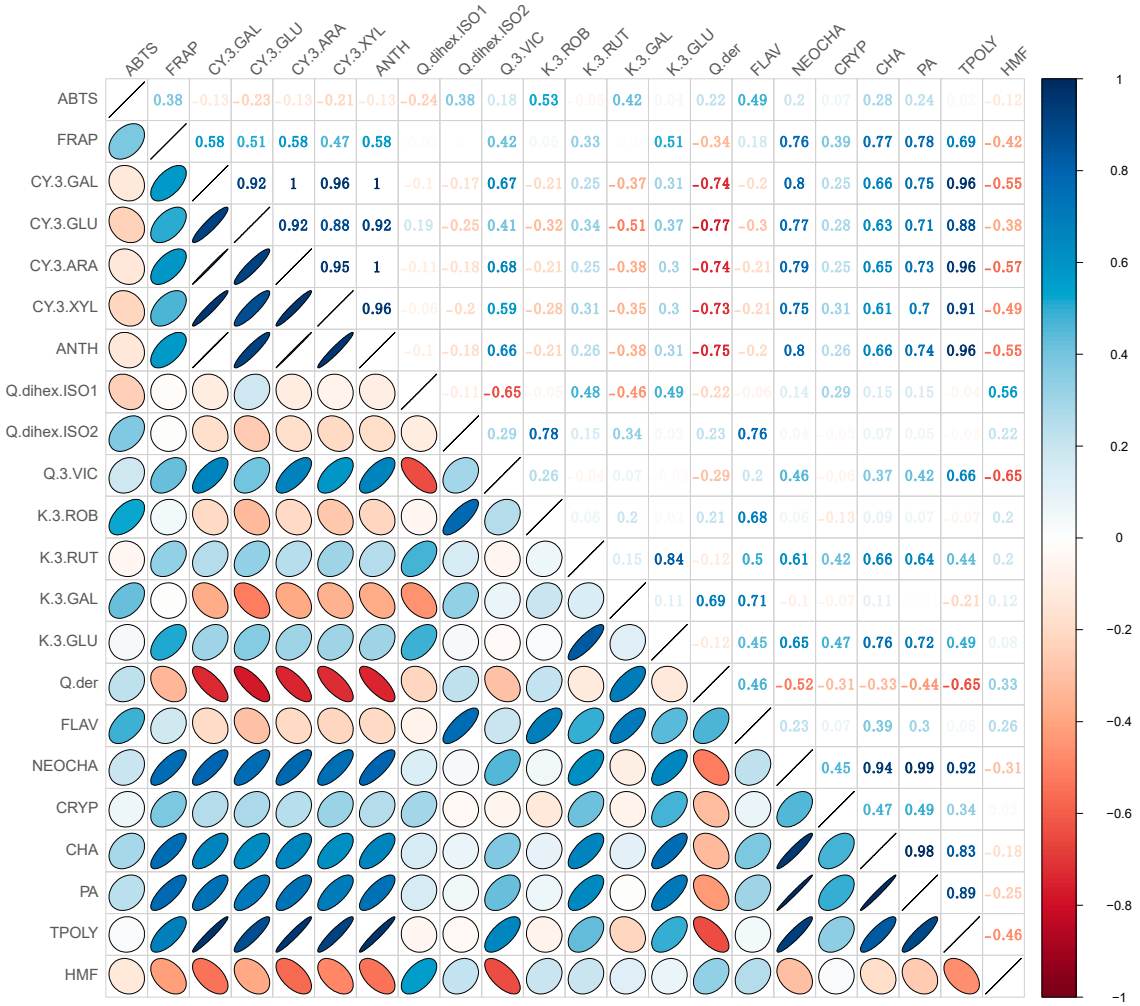

Figure S3. A correlation matrix showing the Pearson's correlation coefficients between each pair of variables (i.e., chemical properties) in chokeberry pomace extract powders data set (powders with addition of carriers; no controls included).

Tables

Table S1. The content of sum of polyphenols, hydroxymethyl-*L*-furfural and the antioxidant capacity measured by TEAC ABTS and FRAP methods of chokeberry pomace extracts powders made with the addition maltodextrin, inulin, trehalose and a mixture of them using different drying methods (average ± standard deviation; $n = 2$).

Drying technique	Process conditions	Carrier	Sum of polyphenols (g/100 g db)	ABTS (mmol Trolox/100 g db)	FRAP (mmol Trolox/100 g db)	HMF (μg/100 g db)
FD	−60 °C / 24 °C	Maltodextrin	5.31 ± 0.81 ^{de}	72.90 ± 2.48 ^{ab}	70.16 ± 1.31 ^{cd}	17.30 ± 2.50 ^{cd}
		Inulin	4.86 ± 0.75 ^{bcde}	72.60 ± 0.92 ^{a}	67.96 ± 1.84 ^{bc}	13.99 ± 1.21 ^{abcd}
		Trehalose	5.33 ± 0.81^{de}	78.36 ± 1.50 ^{bcde}	72.24 ± 1.64 ^{cd}	14.12 ± 0.32 ^{abcd}
		Maltodextrin—Inulin	5.23 ± 0.77 ^{cde}	71.40 ± 2.71 ^{a}	69.25 ± 1.31 ^{cd}	12.93 ± 2.04 ^{abc}
		Maltodextrin—Trehalose	5.42 ± 0.82 ^{e}	76.06 ± 0.65 ^{abcd}	70.30 ± 2.60 ^{cd}	9.14 ± 0.50 ^{a}
		Inulin—Trehalose	5.24 ± 0.79 ^{cde}	76.26 ± 1.30 ^{abcd}	72.12 ± 1.22 ^{cd}	9.43 ± 1.47 ^{a}
VD	60 °C	Maltodextrin	4.64 ± 0.66 ^{bcd}	83.37 ± 0.84 ^{ef}	68.32 ± 0.58 ^{bcd}	10.29 ± 1.35 ^{ab}
		Inulin	5.27 ± 0.76 ^{cde}	83.31 ± 0.62 ^{ef}	73.01 ± 3.01 ^{d}	11.79 ± 2.30 ^{ab}
		Trehalose	4.68 ± 0.60 ^{bcd}	76.46 ± 0.80 ^{abcd}	67.23 ± 1.79 ^{bc}	11.76 ± 0.14 ^{ab}
		Maltodextrin—Inulin	5.21 ± 0.67 ^{cde}	79.91 ± 3.15 ^{def}	72.15 ± 4.03 ^{cd}	13.08 ± 1.60 ^{abc}
		Maltodextrin—Trehalose	4.60 ± 0.63 ^{bc}	77.36 ± 1.78 ^{abcd}	69.36 ± 0.66 ^{cd}	11.32 ± 1.40 ^{ab}
		Inulin—Trehalose	4.97 ± 0.64 ^{bcde}	73.90 ± 2.46 ^{abc}	68.56 ± 1.84 ^{bcd}	14.96 ± 0.56 ^{bcd}
	90 °C	Maltodextrin	5.02 ± 0.67 ^{bcde}	84.42 ± 1.07 ^{f}	69.07 ± 4.47 ^{bcd}	16.91 ± 0.49 ^{cd}
		Inulin	4.41 ± 0.57 ^{b}	73.39 ± 0.54 ^{ab}	62.23 ± 1.98 ^{a}	17.94 ± 0.77 ^{cd}
		Trehalose	4.44 ± 0.67 ^{b}	83.53 ± 2.83 ^{ef}	70.67 ± 0.86 ^{cd}	14.79 ± 0.06 ^{bcd}
		Maltodextrin—Inulin	4.51 ± 0.61 ^{b}	79.38 ± 0.41 ^{cdef}	69.9 ± 1.04 ^{cd}	18.47 ± 0.30 ^{d}
		Maltodextrin—Trehalose	4.93 ± 0.66 ^{bcde}	79.46 ± 0.71 ^{cdef}	70.07 ± 0.92 ^{cd}	15.33 ± 1.15 ^{bcd}
		Inulin—Trehalose	3.29 ± 0.63 ^{a}	75.66 ± 1.05 ^{abcd}	63.70 ± 0.43 ^{ab}	18.84 ± 0.33 ^{d}

FD—freeze drying, VD—vacuum-drying; $^{a-f}$ the same letters within a column indicate no statistically significant differences (HSD Tukey test, $p \leq 0.05$).

Table S2. The content of identified phenolic acids in chokeberry pomace extracts powders made with the addition maltodextrin, inulin, trehalose and a mixture of them using different drying methods (g/100 g db) (n = 2; average ± standard deviation).

Drying technique	Process conditions	Carrier	Phenolic acids			
			Neochlorogenic acid	Cryptochlorogenic acid	Chlorogenic acid	Sum of phenolic acids
FD	–60 °C / 24 °C	Maltodextrin	1.14 ± 0.02 ^{c}	0.032 ± 0.003 ^{c}	1.17 ± 0.02 ^{b}	2.34 ± 0.65 ^{c}
		Inulin	1.02 ± 0.01 ^{bc}	0.024 ± 0.004 ^{abc}	1.05 ± 0.02 ^{ab}	2.10 ± 0.59 ^{abc}
		Trehalose	1.09 ± 0.07 ^{c}	0.031 ± 0.004 ^{bc}	1.14 ± 0.07 ^{b}	2.27 ± 0.63 ^{bc}
		Maltodextrin—Inulin	1.10 ± 0.02 ^{c}	0.026 ± 0.001 ^{abc}	1.11 ± 0.03 ^{ab}	2.24 ± 0.62 ^{bc}
		Maltodextrin—Trehalose	1.11 ± 0.04 ^{c}	0.024 ± 0.003 ^{abc}	1.15 ± 0.03 ^{b}	2.29 ± 0.64 ^{c}
		Inulin—Trehalose	1.08 ± 0.01 ^{bc}	0.023 ± 0.003 ^{abc}	1.13 ± 0.01 ^{b}	2.23 ± 0.62 ^{bc}
VD	60 °C	Maltodextrin	1.01 ± 0.02 ^{bc}	0.019 ± 0.003 ^{a}	1.05 ± 0.02 ^{ab}	2.08 ± 0.59 ^{abc}
		Inulin	1.09 ± 0.04 ^{c}	0.029 ± 0.001 ^{abc}	1.15 ± 0.04 ^{b}	2.27 ± 0.63 ^{bc}
		Trehalose	1.01 ± 0.02 ^{bc}	0.025 ± 0.004 ^{abc}	1.03 ± 0.02 ^{ab}	2.06 ± 0.57 ^{abc}
		Maltodextrin—Inulin	1.09 ± 0.11 ^{c}	0.024 ± 0.002 ^{abc}	1.15 ± 0.12 ^{b}	2.26 ± 0.63 ^{bc}
		Maltodextrin—Trehalose	1.00 ± 0.03 ^{bc}	0.025 ± 0.002 ^{abc}	1.03 ± 0.03 ^{ab}	2.06 ± 0.57 ^{abc}
		Inulin—Trehalose	1.05 ± 0.01 ^{bc}	0.022 ± 0.001 ^{abc}	1.10 ± 0.01 ^{ab}	2.18 ± 0.61 ^{bc}
	90 °C	Maltodextrin	1.11 ± 0.01 ^{c}	0.026 ± 0.003 ^{abc}	1.14 ± 0.01 ^{b}	2.27 ± 0.63 ^{bc}
		Inulin	0.94 ± 0.04 ^{ab}	0.021 ± 0.002 ^{ab}	1.02 ± 0.05 ^{ab}	1.98 ± 0.55 ^{ab}
		Trehalose	1.07 ± 0.01 ^{bc}	0.029 ± 0.002 ^{bc}	1.13 ± 0.01 ^{b}	2.23 ± 0.62 ^{bc}
		Maltodextrin—Inulin	1.02 ± 0.02 ^{bc}	0.022 ± 0.001 ^{abc}	1.09 ± 0.01 ^{ab}	2.13 ± 0.60 ^{bc}
		Maltodextrin—Trehalose	1.08 ± 0.02 ^{bc}	0.022 ± 0.001 ^{abc}	1.13 ± 0.03 ^{b}	2.23 ± 0.63 ^{bc}
		Inulin—Trehalose	0.83 ± 0.01 ^{a}	0.023 ± 0.002 ^{abc}	0.96 ± 0.01 ^{a}	1.81 ± 0.51 ^{a}

FD—freeze drying, VD—vacuum drying; $^{a-c}$ the same letters within a column indicate no statistically significant differences (HSD Tukey test, $p \leq 0.05$).

Table S3. The content of identified flavonols in chokeberry pomace extracts powders made with the addition maltodextrin, inulin, trehalose and a mixture of them using different drying methods (g/100 g db) (n = 2; average ± standard deviation).

	Carrier	Flavonols								
		Quercetin-dihexoside 1	**Quercetin-dihexoside 2**	**Quercetin-3-*O*-vicianoside**	**Kaempferol-3-*O*-robinobioside**	**Kaempferol-3-*O*-rutinoside**	**Kaempferol-3-*O*-galactoside**	**Kaempferol-3-*O*-glucoside**	**Derivative of quercetin**	**Sum of flavonols**
Freeze Drying	M	0.12 ± 0.01 ^{b}	0.03 ± 0.01 ^{abc}	0.03 ± 0.01 ^{ab}	0.10 ± 0.01 ^{bcd}	0.12 ± 0.01 ^{b}	0.25 ± 0.01 ^{a}	0.18 ± 0.01 ^{b}	0.01 ± 0.01 ^{ab}	0.84 ± 0.08 ^{abc}
	I	0.08 ± 0.04 ^{a}	0.03 ± 0.01 ^{ab}	0.04 ± 0.02 ^{bc}	0.09 ± 0.01 ^{ab}	0.10 ± 0.01 ^{ab}	0.27 ± 0.06 ^{ab}	0.16 ± 0.01 ^{ab}	0.01 ± 0.01 ^{a}	0.76 ± 0.08 ^{a}
	T	0.05 ± 0.01 ^{a}	0.03 ± 0.01 ^{abc}	0.06 ± 0.01 ^{def}	0.08 ± 0.01 ^{ab}	0.10 ± 0.01 ^{ab}	0.34 ± 0.02 ^{bc}	0.16 ± 0.01 ^{ab}	0.02 ± 0.01 ^{bc}	0.84 ± 0.10 ^{abc}
	M–I	0.05 ± 0.01 ^{a}	0.03 ± 0.01 ^{ab}	0.05 ± 0.01 ^{bcdef}	0.09 ± 0.01 ^{ab}	0.11 ± 0.01 ^{ab}	0.34 ± 0.01 ^{bc}	0.17 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cde}	0.85 ± 0.11 ^{abc}
	M–T	0.05 ± 0.01 ^{a}	0.03 ± 0.01 ^{ab}	0.06 ± 0.01 ^{def}	0.08 ± 0.01 ^{a}	0.11 ± 0.01 ^{ab}	0.35 ± 0.01 ^{c}	0.17 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cde}	0.86 ± 0.11 ^{abc}
	I–T	0.05 ± 0.01 ^{a}	0.02 ± 0.01 ^{a}	0.06 ± 0.01 ^{ef}	0.08 ± 0.01 ^{ab}	0.10 ± 0.01 ^{ab}	0.33 ± 0.01 ^{bc}	0.17 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cde}	0.83 ± 0.10 ^{ab}
Vacuum Drying 60 °C	M	0.04 ± 0.01 ^{a}	0.02 ± 0.01 ^{a}	0.06 ± 0.01 ^{cdef}	0.11 ± 0.01 ^{cde}	0.09 ± 0.01 ^{a}	0.31 ± 0.01 ^{abc}	0.15 ± 0.01 ^{a}	0.02 ± 0.01 ^{cde}	0.81 ± 0.09 ^{ab}
	I	0.05 ± 0.01 ^{a}	0.04 ± 0.03 ^{abcd}	0.06 ± 0.01 ^{ef}	0.12 ± 0.01 ^{e}	0.10 ± 0.01 ^{ab}	0.33 ± 0.01 ^{abc}	0.16 ± 0.01 ^{ab}	0.02 ± 0.01 ^{bc}	0.89 ± 0.10 ^{abc}
	T	0.05 ± 0.01 ^{a}	0.06 ± 0.01 ^{cd}	0.06 ± 0.01 ^{ef}	0.12 ± 0.01 ^{de}	0.10 ± 0.01 ^{ab}	0.32 ± 0.01 ^{abc}	0.16 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cde}	0.89 ± 0.09 ^{abc}
	M–I	0.05 ± 0.01 ^{a}	0.07 ± 0.01 ^{d}	0.07 ± 0.01 ^{f}	0.13 ± 0.01 ^{e}	0.11 ± 0.01 ^{ab}	0.35 ± 0.04 ^{c}	0.17 ± 0.02 ^{ab}	0.02 ± 0.01 ^{cde}	0.98 ± 0.10 ^{c}
	M–T	0.04 ± 0.01 ^{a}	0.05 ± 0.01 ^{bcd}	0.06 ± 0.01 ^{cdef}	0.11 ± 0.01 ^{cde}	0.09 ± 0.01 ^{a}	0.31 ± 0.01 ^{abc}	0.15 ± 0.01 ^{a}	0.02 ± 0.01 ^{c}	0.84 ± 0.09 ^{abc}
	I–T	0.05 ± 0.01 ^{a}	0.06 ± 0.01 ^{d}	0.07 ± 0.01 ^{f}	0.13 ± 0.01 ^{e}	0.10 ± 0.01 ^{ab}	0.34 ± 0.01 ^{bc}	0.16 ± 0.01 ^{ab}	0.03 ± 0.01 ^{ef}	0.95 ± 0.10 ^{bc}
Vacuum Drying 90 °C	M	0.06 ± 0.01 ^{a}	0.07 ± 0.01 ^{d}	0.05 ± 0.01 ^{bcdef}	0.12 ± 0.01 ^{de}	0.11 ± 0.01 ^{ab}	0.36 ± 0.01 ^{c}	0.16 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cde}	0.95 ± 0.11 ^{bc}
	I	0.05 ± 0.01 ^{a}	0.05 ± 0.01 ^{abcd}	0.04 ± 0.01 ^{bcde}	0.11 ± 0.01 ^{cde}	0.10 ± 0.01 ^{ab}	0.33 ± 0.01 ^{abc}	0.15 ± 0.01 ^{a}	0.03 ± 0.01 ^{def}	0.85 ± 0.10 ^{abc}
	T	0.06 ± 0.01 ^{a}	0.05 ± 0.01 ^{abcd}	0.03 ± 0.01 ^{ab}	0.12 ± 0.01 ^{de}	0.11 ± 0.01 ^{ab}	0.37 ± 0.01 ^{c}	0.17 ± 0.01 ^{ab}	0.03 ± 0.01 ^{f}	0.95 ± 0.11 ^{bc}
	M–I	0.07 ± 0.01 ^{a}	0.05 ± 0.01 ^{abcd}	0.04 ± 0.01 ^{bcd}	0.11 ± 0.01 ^{cde}	0.10 ± 0.01 ^{ab}	0.35 ± 0.01 ^{c}	0.16 ± 0.01 ^{ab}	0.03 ± 0.01 ^{f}	0.92 ± 0.10 ^{bc}
	M–T	0.07 ± 0.01 ^{a}	0.05 ± 0.01 ^{abcd}	0.05 ± 0.01 ^{bcdef}	0.12 ± 0.01 ^{de}	0.11 ± 0.01 ^{ab}	0.36 ± 0.01 ^{c}	0.17 ± 0.01 ^{ab}	0.02 ± 0.01 ^{cd}	0.94 ± 0.11 ^{bc}
	I–T	0.07 ± 0.01 ^{a}	0.03 ± 0.01 ^{abc}	0.01 ± 0.01 ^{a}	0.09 ± 0.01 ^{abc}	0.10 ± 0.01 ^{ab}	0.38 ± 0.01 ^{c}	0.16 ± 0.01 ^{ab}	0.04 ± 0.01 ^{g}	0.88 ± 0.12 ^{abc}

M – Maltodextrin, I – Inulin, T – Trehalose, M–I – Maltodextrin – Inulin, M–T – Maltodextrin – Trehalose, I–T – Inulin-Trehalose; $^{a–g}$ the same letters within a column indicate no statistically significant differences (HSD Tukey test, $p \leq 0.05$).