

MATERIAL SUPPLEMENTARY

Bioaccessibility Evaluation by *In Vitro* Digestion of Microencapsulated Extracts of Habanero Pepper Leaves Obtained Through an Optimized Spray-Drying Process

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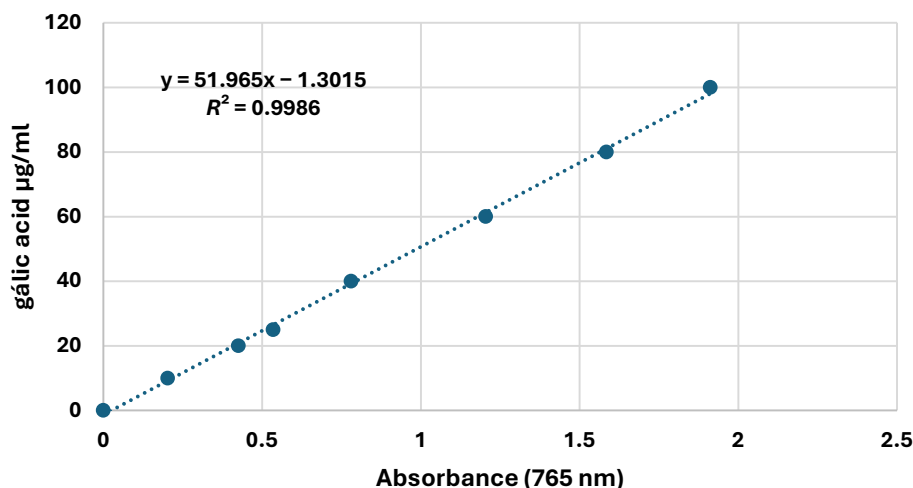


Figure S1. Calibration curve for the determination of total polyphenols in microencapsulated *Capsicum chinense* leaf extract samples under *in vitro* digestion.

Table S1. Total polyphenol content of microencapsulated *Capsicum chinense* extract samples during *in vitro* digestion.

# Exp	GG (%)	InT (°C)	M-BD	M-Gc	M-Int
1	5	80	10.34 ± 0.31 ^{fg}	14.05 ± 0.30 ^k	26.44 ± 0.00 ^s
2	10	80	10.84 ± 0.50 ^{gh}	18.09 ± 0.29 ⁿ	22.83 ± 0.29 ^q
3	5	100	8.07 ± 0.08 ^{ab}	14.65 ± 1.80 ^l	31.00 ± 0.30 ^v
4	10	100	11.70 ± 0.07 ⁱ	24.24 ± 1.87 ^q	28.13 ± 0.30 ^t
5	7.5	90	13.37 ± 0.04 ^j	16.65 ± 0.30 ^m	29.82 ± 0.30 ^u
6	7.5	90	12.20 ± 0.04 ⁱ	10.42 ± 0.30 ^g	25.38 ± 0.00 ^r
7	7.5	90	13.21 ± 0.29 ^j	14.08 ± 0.30 ^k	25.20 ± 0.30 ^r
8	7.5	90	12.04 ± 0.04 ⁱ	11.48 ± 0.30 ⁱ	29.31 ± 0.30 ^u
9	4	90	9.19 ± 0.08 ^{cde}	18.50 ± 0.52 ⁿ	27.31 ± 0.52 ^t
10	11	90	8.40 ± 0.12 ^{abc}	11.23 ± 0.52 ^{hi}	21.83 ± 0.30 ^{op}
11	7.5	76	8.98 ± 0.04 ^{cde}	18.52 ± 0.52 ⁿ	21.37 ± 0.60 ^o
12	7.5	104	7.80 ± 0.04 ^a	9.17 ± 0.30 ^{de}	22.63 ± 0.30 ^{pq}
13	8.06	104.1	8.82 ± 0.04 ^{bcd}	9.46 ± 0.30 ^{ef}	22.71 ± 0.30 ^{pq}
14	7.8	89.4	8.49 ± 0.04 ^{abcd}	14.02 ± 0.30 ^k	22.01 ± 0.30 ^{op}

Note: Exp = Experiment; GG = Guar gum; InT = Inlet temperature; M-BD = Microencapsulated before digestion; M-Gc = Microencapsulated during gastric phase; M-Int = Microencapsulated during intestinal phase. Different letters indicate statistical differences (LSD, $p < 0.05$).

Table S2. Antioxidant capacity of microencapsulated *Capsicum chinense* extract samples during *in vitro* digestion.

Sample	GG (%)	InT (°C)	M-BD	M-Gto	M-Int
1	5	80	15.26 ± 1.54 ^{klmn}	6.38 ± 0.22 ^{ab}	6.13 ± 0.00 ^a
2	10	80	16.17 ± 1.51 ^{no}	8.43 ± 0.25 ^{defg}	7.55 ± 0.00 ^{bcd}
3	5	100	16.17 ± 1.14 ^{no}	8.14 ± 0.14 ^{def}	6.74 ± 0.44 ^{ab}
4	10	100	17.69 ± 1.22 ^{pq}	6.33 ± 0.36 ^{ab}	7.88 ± 0.08 ^{cdef}
5	7.5	90	17.31 ± 0.25 ^{op}	8.29 ± 0.14 ^{defg}	8.36 ± 0.08 ^{defg}
6	7.5	90	17.50 ± 0.30 ^{pq}	8.14 ± 0.29 ^{def}	10.11 ± 0.14 ^h
7	7.5	90	15.36 ± 0.60 ^{klmn}	8.33 ± 0.08 ^{defg}	8.74 ± 0.22 ^{defg}
8	7.5	90	17.07 ± 0.73 ^{op}	7.62 ± 0.22 ^{cde}	9.40 ± 0.14 ^{gh}
9	4	90	12.96 ± 0.65 ⁱ	6.05 ± 0.08 ^a	9.50 ± 0.08 ^{gh}
10	11	90	13.53 ± 0.43 ^{ij}	8.76 ± 0.08 ^{defg}	6.27 ± 0.38 ^a
11	7.5	76	12.96 ± 0.85 ⁱ	9.10 ± 0.08 ^{fgh}	15.57 ± 0.08 ^{lmn}
12	7.5	104	19.56 ± 0.33 ^r	8.81 ± 0.08 ^{efg}	14.14 ± 0.30 ^{ijk}
13	8.06	104.1	14.59 ± 0.25 ^{ijklm}	8.29 ± 0.14 ^{defg}	15.71 ± 0.08 ^{mn}
14	7.8	89.4	14.45 ± 0.38 ^{gkl}	8.86 ± 0.14 ^{fg}	17.34 ± 0.14 ^p
NADES-68	-	-	61.90 ± 1.37 ^t	18.69 ± 3.46 ^{qr}	28.15 ± 0.70 ^s

Note: GG = Guar gum; InT = Inlet temperature; M-BD = Microencapsulated before digestion; M-Gto = Microencapsulated during gastric phase; M-Int = Microencapsulated during intestinal phase. Different letters indicate statistical differences (LSD, $p < 0.05$).

Table S3. Bioaccessibility results of total polyphenol content during *in vitro* digestion in the gastric and intestinal phases.

Sample	GG (%)	InT (°C)	M-BD *	M-Gc (%)	M-Int (%)
1	5	80	10.34 ± 0.31 ^{fg}	37.62 ± 2.93 ^H	155.91 ± 6.81 ^P
2	10	80	10.84 ± 0.50 ^{cd}	68.66 ± 6.03 ^I	111.83 ± 9.91 ^M
3	5	100	8.07 ± 0.08 ^{ab}	94.41 ± 17.34 ^{JK}	283.28 ± 3.22 ^R
4	10	100	11.70 ± 0.07 ^{dc}	100.40 ± 12.31 ^{JKL}	141.82 ± 2.43 ^O
5	7.5	90	13.37 ± 0.04 ^g	25.81 ± 1.68 ^{FG}	123.73 ± 2.18 ^N
6	7.5	90	12.20 ± 0.04 ^{efg}	-13.12 ± 1.74 ^B	108.08 ± 0.60 ^{LM}
7	7.5	90	13.21 ± 0.29 ^{fg}	7.90 ± 1.28 ^{CD}	91.47 ± 1.98 ^J
8	7.5	90	12.04 ± 0.04 ^{def}	-3.25 ± 1.73 ^{BC}	144.08 ± 1.78 ^O
9	4	90	9.19 ± 0.08 ^{bc}	98.45 ± 3.34 ^{JKL}	199.97 ± 6.79 ^Q
10	11	90	8.40 ± 0.12 ^{ab}	36.85 ± 6.64 ^{GH}	162.03 ± 6.30 ^P
11	7.5	76	8.98 ± 0.04 ^{ab}	103.45 ± 5.46 ^{KLM}	140.03 ± 5.99 ^O
12	7.5	104	7.80 ± 0.04 ^a	18.61 ± 2.90 ^{EF}	191.07 ± 2.73 ^Q
13	8.06	104.1	8.82 ± 0.04 ^{ab}	9.25 ± 3.03 ^E	158.44 ± 3.84 ^P
14	7.8	89.4	8.49 ± 0.04 ^{ab}	67.13 ± 3.28 ^I	160.13 ± 2.50 ^P
NADES-68	-	-	182.92 ± 0.04 ^h	-85.46 ± 0.31 ^A	-80.19 ± 0.63 ^A

Note: GG = Guar gum; InT = Inlet temperature; M-BD = Microencapsulated before digestion; M-Gc = Microencapsulated during gastric phase; M-Int = Microencapsulated during intestinal phase. Different lowercase letters in the same column indicate statistical differences (LSD, $p < 0.05$). Different uppercase letters in the same column and row indicate statistical differences (LSD, $p < 0.05$); * Samples 1 to 14 were reported as mg gallic acid equivalent per 100 g of powder, whereas NADES-68 was reported as mg gallic acid equivalent per 100 g of dry leaf.

Table S4. Regression Coefficients of the Response Surface for the Polyphenol Bioaccessibility during the Gastric Phase of Microencapsulated Habanero Pepper Leaf Extracts.

<i>Coefficient</i>	<i>Estimated</i>
Constant	1569.03
A:GG	-2.20769
B:IT	-33.9713
AA	5.18682
AB	-0.973867
BB	0.245358

Table S5. Results of the response surface ANOVA for the polyphenol bioaccessibility during the gastric phase of microencapsulated habanero pepper leaf extracts.

<i>Source</i>	<i>Sum of Squares</i>	<i>Gl</i>	<i>Mean Square</i>	<i>F-Ratio</i>	<i>p-Value</i>
A:GG	21,574.9	1	21,574.9	44.65	<0.0001
B:IT	19,832.6	1	19,832.6	41.05	<0.0001
AA	19,618.4	1	19,618.4	40.60	<0.0001
AB	7113.12	1	7113.12	14.72	0.0006
BB	11,238.3	1	11,238.3	23.26	<0.0001
Total error	14,495.0	30	483.168		
Total	89,172.5	35			