

Supplementary Material: Buccal Resveratrol Delivery System as a Potential New Concept for the Periodontitis Treatment

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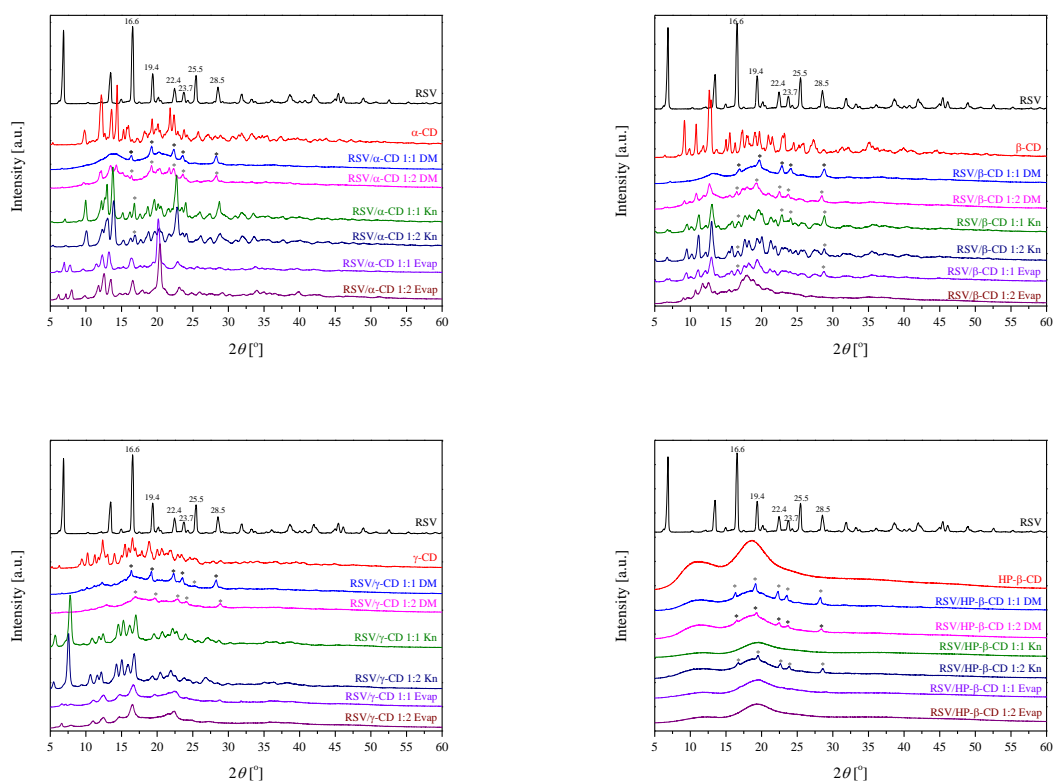


Figure S1. X-ray diffractograms of the solid samples. 2θ positions of the principal diffraction peaks are shown for RSV, while the traces of crystalline RSV peaks in the systems are indicated by “*”.

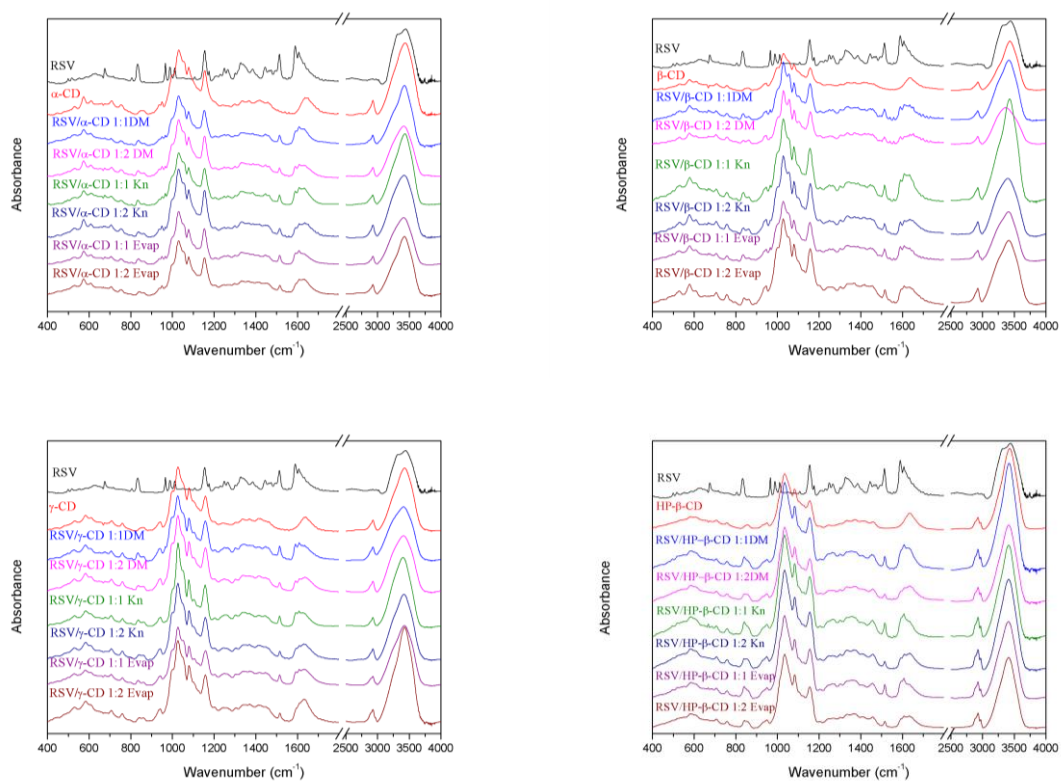


Figure S2. FT-IR spectra of powder RSV/CD systems.

Table S1. Validation parameters of the HPLC-DAD method.

Parameter	Results
Linearity: $y = ax + b$	
$a \pm S_a$	$54\,072.50 \pm 2.00$
$b \pm S_b$	insignificant ($\alpha=0.05$)
Correlation coefficient (r)	0.9999
Range of linearity [mg mL^{-1}]	0.1–40.0
Intra-day precision, RSD (<5% required) = repeatability	
0.4 [mg mL^{-1}]	0.57
4.0 [mg mL^{-1}]	0.11
40.0 [mg mL^{-1}]	0.14
Inter-day precision = reproducibility	
0.4 [mg mL^{-1}]	0.52
4.0 [mg mL^{-1}]	1.09
40.0 [mg mL^{-1}]	0.79
Limit of detection (LOD) [$\mu\text{g mL}^{-1}$]	1.81
Limit of quantification (LOQ) [$\mu\text{g mL}^{-1}$]	5.48

S_a standard deviation of slope; S_b standard deviation of intercept, t , calculated values of the Student's t test, $t_{\alpha,f} = 2.228$ critical values of the Student's test for degrees of freedom $f = 10$ and significance level $\alpha = 0.05$.

Table S2. The antioxidant effect of RSV/CD powder systems.

	DPPH IC₅₀ [µg mL⁻¹]	CUPRAC [IC_{0.5} µg mL⁻¹]
RSV	22.1	33.2
RSV/α-CD 1:1 DM	21.1	32.5
RSV/α-CD 1:2 DM	21.1	32.5
RSV/α-CD 1:1 Kn	25.0	26.3
RSV/α-CD 1:2 Kn	25.6	26.5
RSV/α-CD 1:1 Evap	24.5	26.4
RSV/α-CD 1:2 Evap	24.5	25.5
RSV/β-CD 1:1 DM	20.3	25.0
RSV/β-CD 1:2 DM	20.9	25.8
RSV/β-CD 1:1 Kn	21.0	26.7
RSV/β-CD 1:2 Kn	21.3	26.3
RSV/β-CD 1:1 Evap	27.1	30.1
RSV/β-CD 1:2 Evap	23.6	25.8
RSV/HP-β-CD 1:1 DM	26.7	33.1
RSV/HP-β-CD 1:2 DM	24.3	33.1
RSV/HP-β-CD 1:1 Kn	26.5	31.1
RSV/HP-β-CD 1:2 Kn	25.1	34.6
RSV/HP-β-CD 1:1 Evap	27,5	33.2
RSV/HP-β-CD 1:2 Evap	21.9	30.1
RSV/γ-CD 1:1 DM	22.2	24.8
RSV/γ-CD 1:2 DM	21.9	24.3
RSV/γ-CD 1:1 Kn	20.3	27.2
RSV/γ-CD 1:2 Kn	21.3	25.5
RSV/γ-CD 1:1 Evap	18.2	23.7
RSV/γ-CD 1:2 Evap	20.3	25.8
F1	20.6	31.6
F2	23.1	28.7
F3	23.1	26.5
F4	22.4	32.3
F5	24.0	32.5

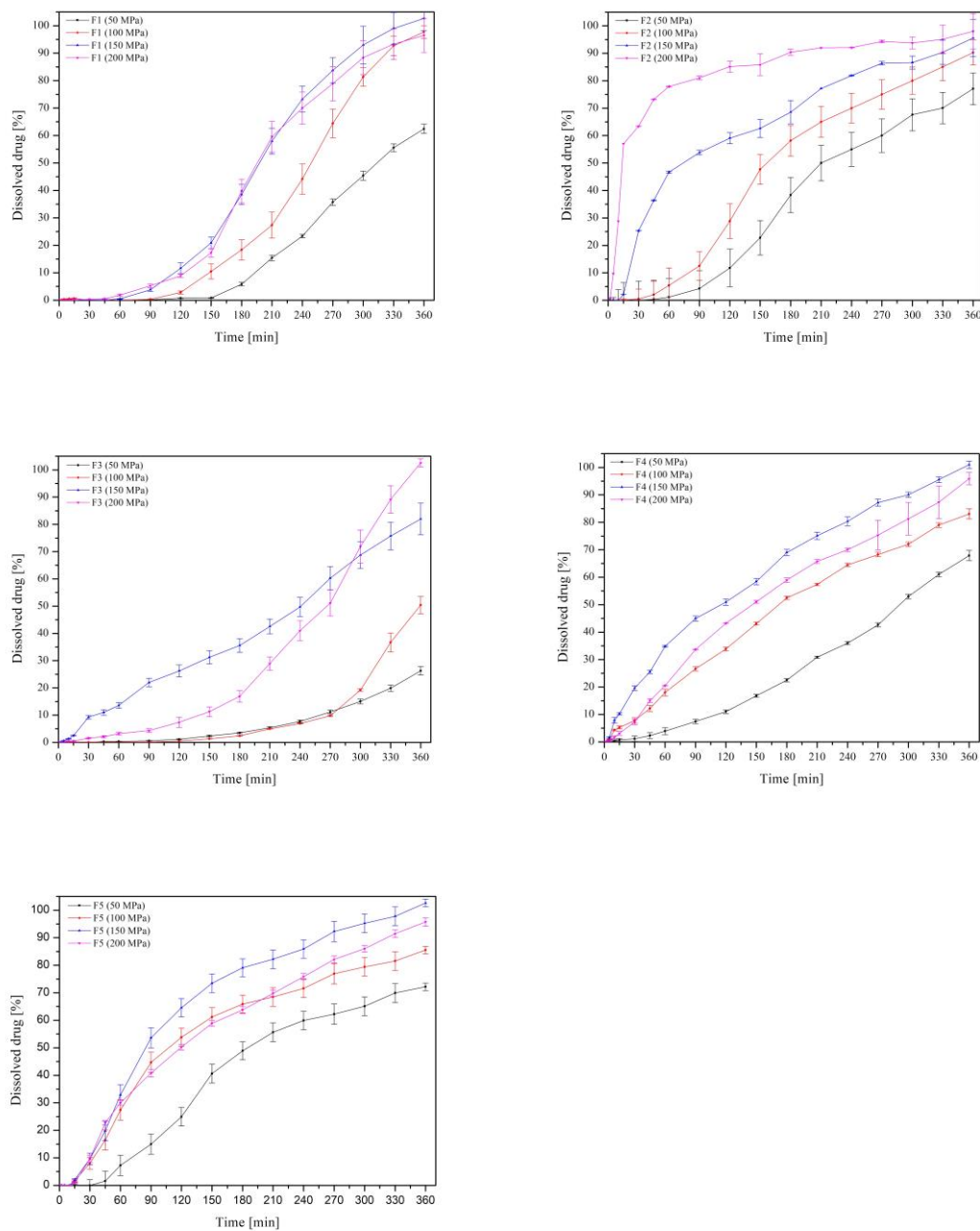


Figure S3. Dissolution profiles of the RSV/CD tablets (F1-F5).

Table S3. Mathematical characteristics of the RSV/CD tablets (F1-F5)

Formulation	Mathematical model								
	Zero-order kinetic		First-order kinetic		Higuchi kinetic		Korsmeyer-Peppas kinetic		
	K	R ²	K	R ²	K	R ²	K	R ²	n
F1 (7.5 kN)	18.99	0.9474	1.0396	0.7715	6.3796	0.8058	1.8203	0.6785	0.3542
F1 (10 kN)	17.982	0.944	1.0711	0.8658	6.0566	0.8065	2.0376	0.7895	0.3716
F2 (7.5 kN)	16.23	0.8835	0.7931	0.4958	6.3349	0.9534	0.7005	0.6532	0.339
F2 (10 kN)	12.732	0.5988	0.4198	0.327	5.9132	0.8268	1.1829	0.6022	0.2357
F3 (7.5 kN)	13.391	0.9939	0.713	0.764	4.7674	0.9253	0.5358	0.9077	0.2953
F3 (10 kN)	15.048	0.8756	0.8841	0.9571	4.9664	0.7237	1.3939	0.9158	0.3181
F4 (7.5 kN)	16.998	0.9595	0.6834	0.5208	6.4357	0.9792	0.2138	0.7395	0.3105
F4 (10 kN)	16.428	0.9808	0.7584	0.6948	6.0052	0.9532	0.5816	0.8573	0.3189
F5 (7.5 kN)	18.707	0.9134	0.7535	0.6697	7.0601	0.9379	0.4167	0.8461	0.3229
F5 (10 kN)	16.927	0.9552	0.8368	0.5914	6.3114	0.9593	0.9099	0.7259	0.3446

The highest R² values in bold.