

Supplementary Information

Development and Characterization of Gel-Based Buccoadhesive Bilayer Formulation of Nifedipine

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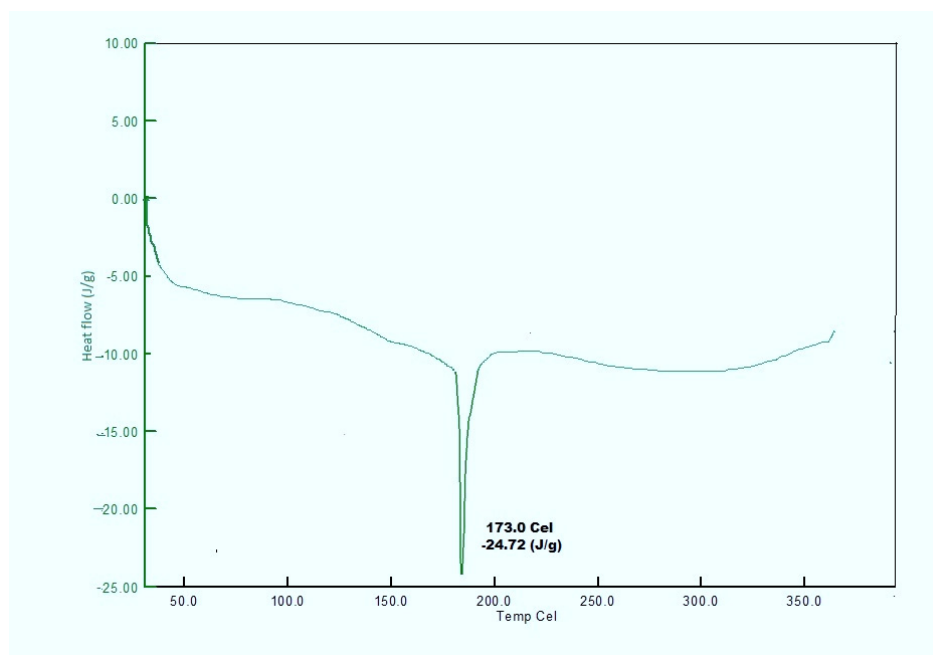


Figure S1. DSC curve of Nifedipine

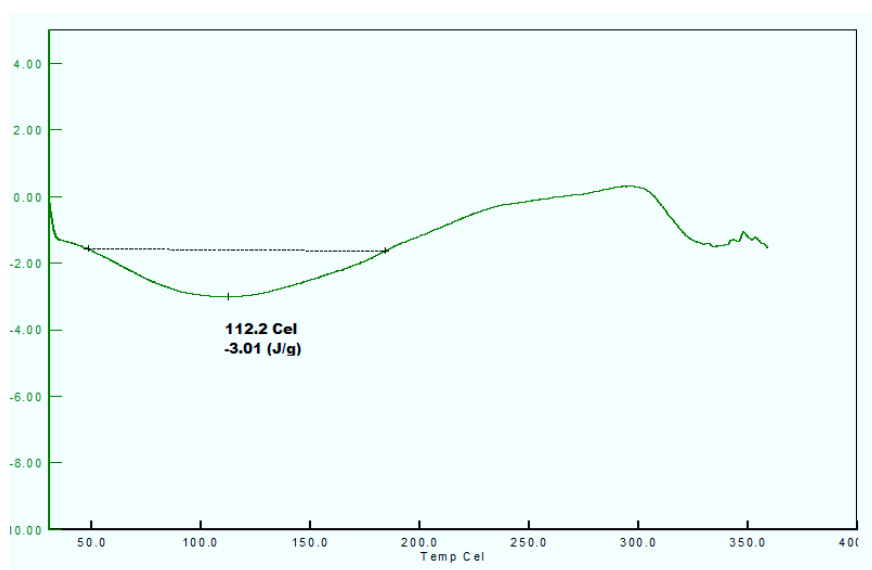


Figure S2. DSC curve of HPMC K 100

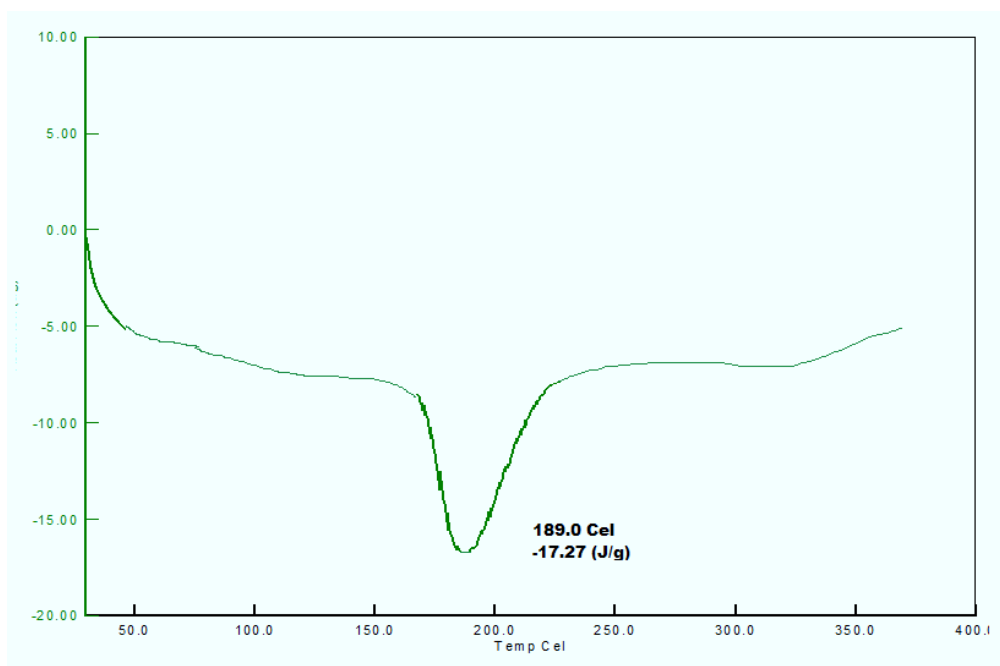


Figure S3. DSC curve of SCMC

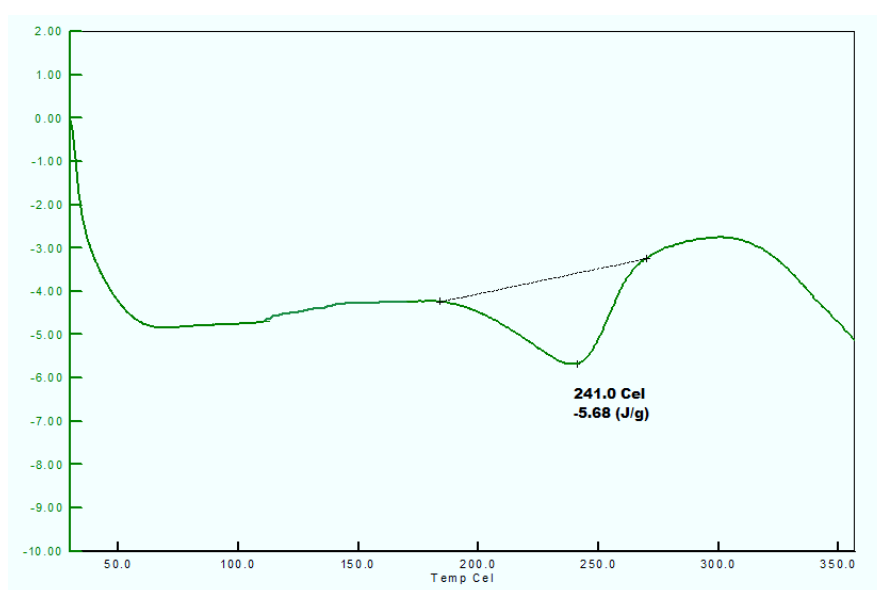


Figure S4. DSC curve of Carbopol 934

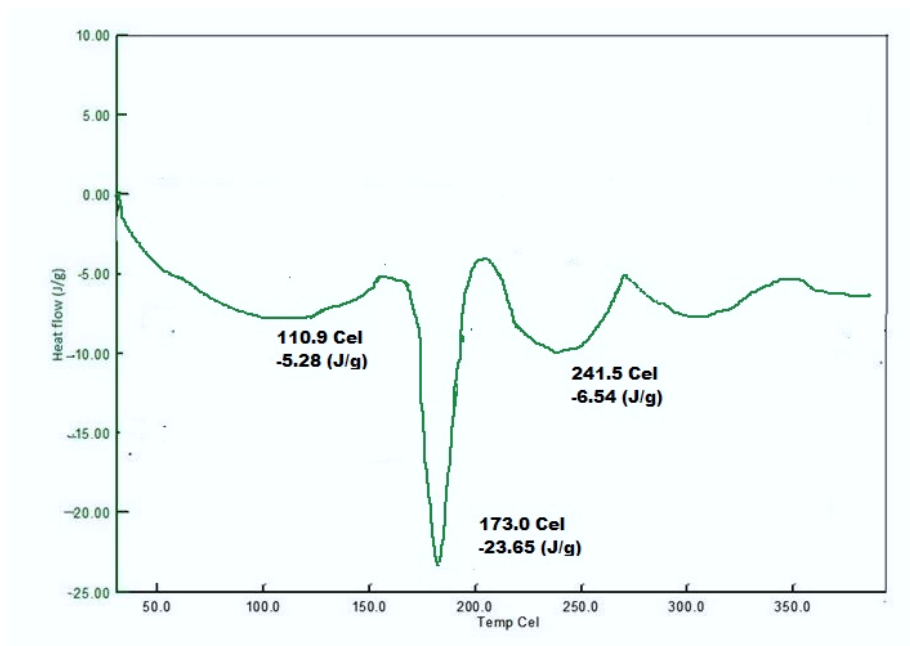


Figure S5. DSC curve of Nifedipine and polymer mixture



Figure S6. Controlled buccal mucosa



Figure S7. Test buccal mucosa

Table S1. Swelling index data for all formulations

Formula tion code	Swelling index \pm S.D					
	Time in h					
	1	2	3	4	5	6
NT1	26.09 \pm 0.76	38.61 \pm 1.08	55.58 \pm 0.80	64.96 \pm 0.70	71.27 \pm 0.76	74.84 \pm 0.27
NT2	22.23 \pm 0.72	32.15 \pm 0.91	40.75 \pm 0.46	50.71 \pm 0.54	60.04 \pm 0.61	65.21 \pm 0.53
NT3	19.19 \pm 0.64	24.48 \pm 0.63	37.81 \pm 0.67	45.84 \pm 0.68	51.8 \pm 0.66	55.77 \pm 0.51
NT4	23.73 \pm 1.08	33.97 \pm 0.48	46.13 \pm 0.93	51.81 \pm 0.69	63.84 \pm 0.28	68.91 \pm 0.93
NT5	27.39 \pm 1.03	41.62 \pm 0.90	57.67 \pm 0.53	66.68 \pm 0.75	71.25 \pm 0.61	78.6 \pm 1.04
NT6	19.81 \pm 0.67	31.39 \pm 0.98	39.81 \pm 0.67	51.12 \pm 0.62	57.52 \pm 1.08	62.76 \pm 0.43
NT7	16.01 \pm 0.84	25.64 \pm 0.75	32.76 \pm 0.54	41.10 \pm 0.88	46.46 \pm 0.87	51.76 \pm 0.64
NT8	26.65 \pm 0.72	40.98 \pm 0.79	56.93 \pm 0.86	65.29 \pm 0.97	71.28 \pm 0.30	74.84 \pm 0.60
NT9	23.35 \pm 1.12	31.43 \pm 0.64	41.91 \pm 0.93	51.66 \pm 0.57	61.44 \pm 0.63	65.69 \pm 0.64
NT10	31.47 \pm 0.93	42.62 \pm 0.77	58.41 \pm 0.79	67.45 \pm 0.96	73.17 \pm 0.61	76.85 \pm 0.65

Table S2. Ex-vivo buccoadhesive strength

Formulation code	Buccoadhesive Strength in g
NT1	33.2
NT2	22.6
NT3	23.5
NT4	26.4
NT5	34.6
NT6	19.2
NT7	22.1
NT8	33.8
NT9	23.4
NT10	32.7

Table S3. In-vitro and Higuchi's release data

TIME	Sqrt	NT1	NT2	NT3	NT4	NT5	NT6	NT7	NT8	NT9	NT10
0	0	0	0	0	0	0	0	0	0	0	0
1	1	10.8	12.6	11.8	13.4	12.8	11.2	14.2	10.2	13.2	11.6
2	1.41421	18.2	23.2	21.6	22.8	19.2	20.6	25.6	18.6	23.8	18.4
3	1.73205	26.1	31.4	32.8	33.2	28.8	31.2	37.1	25.2	32.4	24.6
4	2	34.2	42.6	43.2	45.1	36.2	42.4	46.5	32.8	43.2	32.2
5	2.23607	43.2	49.8	52.1	53.6	43.4	48.6	54.8	42.6	51.2	43.8
6	2.44949	51.4	57.6	63.6	64.2	50.6	56.8	66.6	52.4	59.4	51.6
7	2.64575	62.2	68.2	70.6	71.9	61.2	67.4	75.2	60.8	68.3	61.8
8	2.82843	71.6	74.6	78.4	79.2	69.6	73.2	83.4	71.6	76.2	72.2
9	3	81.2	81.2	83.9	84.4	78.2	80.6	90.2	82.3	81.8	79.4
10	3.16228	87.4	89.6	91.2	92.4	86.4	88.2	97.4	87.2	89.4	86.2
11	3.316625	92.4	97.1	97.4	98.6	92.8	97.6		91.6	98.2	91.3
12	3.464102	98.3				98.6			98.4		98.1

Table S4. Peppa's data

LOG T	LOG % R									
	NT1	NT2	NT3	NT4	NT5	NT6	NT7	NT8	NT9	NT10
0	1.033 42	1.100 37	1.071 88	1.127 1	1.107 21	1.049 22	1.152 29	1.008 6	1.120 57	1.064 46
0.3010 3	1.260 07	1.365 48	1.334 45	1.357 93	1.283 3	1.313 86	1.408 24	1.269 51	1.376 57	1.264 82
0.4771 21	1.416 64	1.496 93	1.515 87	1.521 14	1.459 39	1.494 15	1.569 37	1.401 4	1.510 54	1.390 93
0.6020 6	1.534 03	1.629 41	1.635 48	1.654 17	1.558 71	1.627 36	1.667 45	1.515 87	1.635 48	1.507 85
0.6989 7	1.635 48	1.697 23	1.716 84	1.729 16	1.637 49	1.686 64	1.738 78	1.629 41	1.709 26	1.641 47
0.7781 51	1.710 96	1.760 42	1.803 46	1.807 53	1.704 15	1.754 34	1.823 47	1.719 33	1.773 78	1.712 65
0.8450 98	1.793 79	1.833 78	1.848 8	1.856 73	1.786 75	1.828 65	1.876 22	1.783 9	1.834 42	1.790 99
0.9030 9	1.854 91	1.872 74	1.894 32	1.898 72	1.842 61	1.864 51	1.921 17	1.854 91	1.881 95	1.858 54
0.9542 43	1.909 56	1.909 55	1.923 76	1.926 34	1.893 21	1.906 33	1.955 21	1.915 39	1.912 75	1.899 82
1	1.941 51	1.952 31	1.959 99	1.965 67	1.936 51	1.945 47	1.988 56	1.940 52	1.951 34	1.935 51
1.0413 93	1.965 67	1.987 22	1.988 56	1.993 87	1.967 55	1.989 45		1.961 89	1.992 11	1.960 47
1.0791 81	1.992 55				1.993 88			1.992 99		1.991 67

Table S5. Ex-vivo permeation data of NT5

Time (h)	Cumulative % Drug Release
0	0
1	7.24
2	13.15
3	22.18
4	29.41
5	41.26
6	50.42
7	57.6
8	63.75
9	71.32
10	78.24
11	86.53
12	93.81

Table S6. In-vivo drug release of NT5

Time in h	Cumulative percentage drug release
0	0
1	9.62
3	23.48
6	44.69
9	67.84
12	90.74

Table S7. In-vitro and In-vivo correlation data of NT5

Time in h	<i>In-vivo</i> cumulative % drug release	<i>In-vitro</i> cumulative % drug release
	<i>0</i>	<i>0</i>
1	9.62	12.8
3	23.48	28.8
6	44.69	50.6
9	67.84	78.2
12	90.74	98.6