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Supplementary Information

Optimization of a New Dissolution Test for Oxcarbazepine Capsules using Mixed-Level Factorial Design

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Table S1. "b" Coefficient calculation

	Coefficients	Significant intervals	
Mean	60.03591	59.42733	60.64448999
X_1	5.415861	5.082528	5.749194615
X_2	13.55133	13.218	13.8846618
X_3	0.886864	0.614698	1.1590292
X_{12}	−4.3891	-4.96645	−3.81174705
X_{22}	17.08021	16.50286	17.65755911
X_1X_2	−2.25243	-2.66068	−1.84418205
X_1X_3	0.490914	0.157581	0.824247368
X_2X_3	−0.15214	-0.48547	0.181192138
$X_1X_2X_3$	0.798203	0.389955	1.206451261

The coefficients were calculated using: $(X^tX)^{-1}X^ty$; significant intervals were calculated using: $b_i \pm \text{error} \times t_{0.05,\ v=90}$.

Table S2. Standard error calculation of the "b" coefficients

0.30429	0	0	0	0	0	0	0	0	0
0	0.166667	0	0	0	0	0	0	0	0
0	0	0.166667	0	0	0	0	0	0	0
0	0	0	0.136083	0	0	0	0	0	0
0	0	0	0	0.288675	0	0	0	0	0
0	0	0	0	0	0.288675	0	0	0	0
0	0	0	0	0	0	0.204124	0	0	0
0	0	0	0	0	0	0	0.166667	0	0
0	0	0	0	0	0	0	0	0.166667	0
0	0	0	0	0	0	0	0	0	0.204124

The standard errors were calculated as the square root of $(X^tX)^{-1} \times s^2_{clustered}$.

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Table S3. Plotting of the response surface. The levels were substituted in the statistical model in order to find the region of best response

		X_2									
		1	0.8	0.6	0.4	0.2	0	−0.2	−0.4	−0.6	−0.8
	50	82.56052388	73.44097	65.68782	59.3011	54.28079	50.6269	48.33943	47.41837	47.86373	49.6755
	40	85.03110851	75.96972	68.27475	61.94619	56.98405	53.38833	51.15903	50.29614	50.79966	52.66961
	30	87.15056535	78.14735	70.51054	64.24016	59.33619	55.79863	53.6275	52.82278	53.38447	55.31259
	20	88.9188944	79.97384	72.39521	66.18299	61.33719	57.85781	55.74484	54.99829	55.61816	57.60444
	10	90.33609567	81.44921	73.92875	67.7747	62.98707	59.56585	57.51106	56.82267	57.50071	59.54516
X_1	0	91.40216915	82.57346	75.11116	69.01528	64.28582	60.92277	58.92614	58.29593	59.03214	61.13476
	20	92.11711485	83.34657	75.94244	69.90473	65.23344	61.92856	59.9901	59.41806	60.21243	62.37322
	40	92.48093276	83.76856	76.4226	70.44306	65.82994	62.58323	60.70294	60.18906	61.0416	63.26056
	60	92.49362289	83.83942	76.55163	70.63026	66.0753	62.88676	61.06464	60.60894	61.51965	63.79678
	80	92.15518523	83.55915	76.32953	70.46633	65.96954	62.83917	61.07522	60.67768	61.64656	63.98186
	100	91.46561979	82.92775	75.7563	69.95127	65.51265	62.44045	60.73467	60.3953	61.42235	63.81582

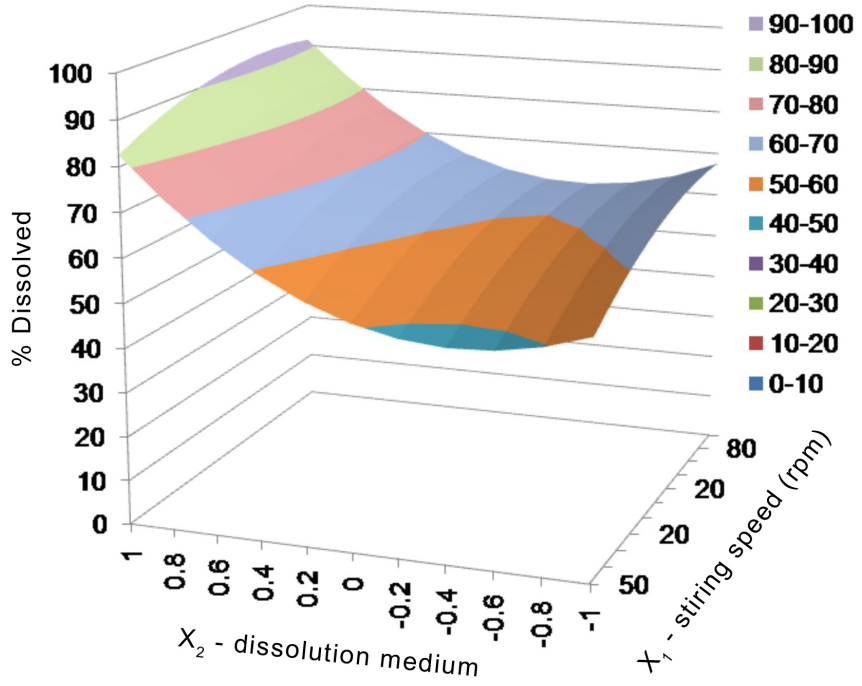

Figure S1. Response surface for the $3^2 \times 2$ mixed factorial design. X_1 = stirring speed (rpm); X_2 = dissolution medium.