Electronic Supplementary Information (ESI)

for

Preparation and in vitro characterization of valsartan-loaded ethyl cellulose and poly(methyl methacrylate) nanoparticles

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Experimental design of ethyl cellulose and poly (methyl methacrylate)-valsartan nanoparticles for particle size and encapsulation efficiency

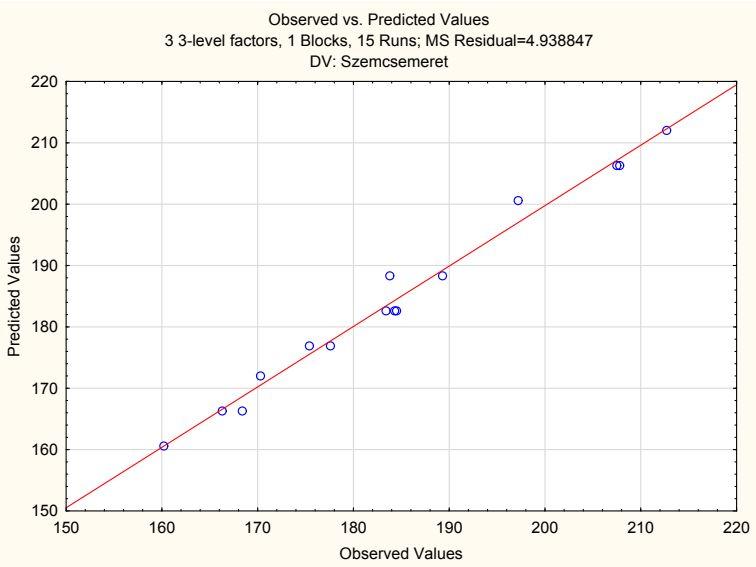

Figure S1: Correlation of the calculated and experimentally determined particle size data for ethyl cellulose-valsartan nanoparticles.

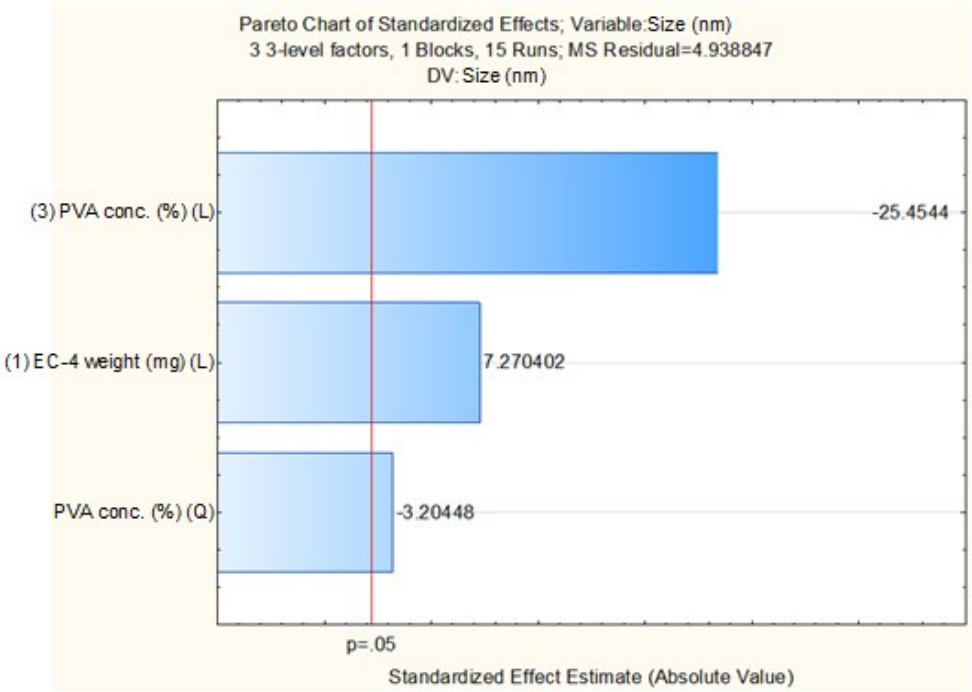

Figure S2: Statistically significant parameters in the preparation of ethyl cellulose-valsartan nanoparticles.

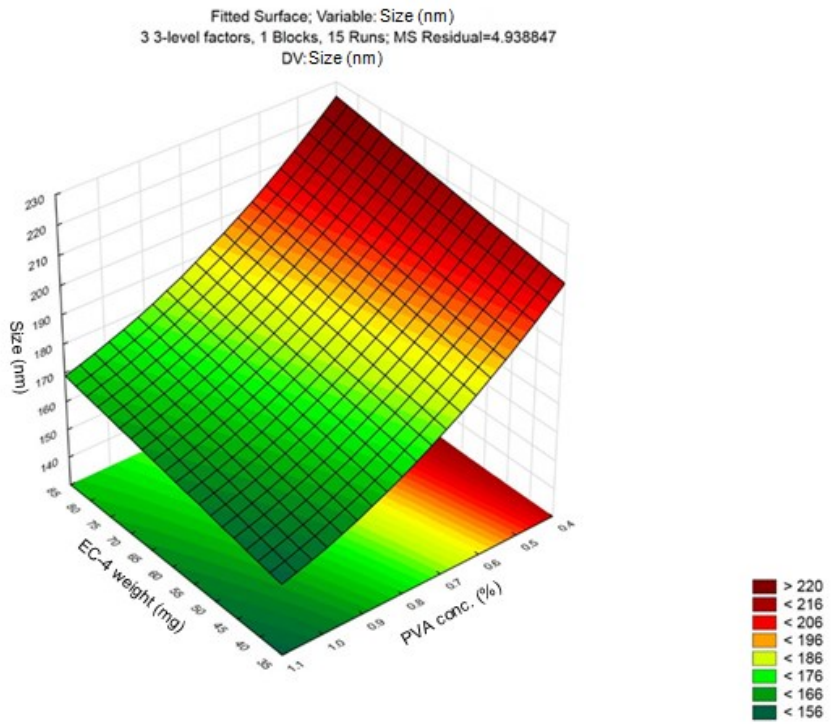

Figure S3: Effect of ethyl cellulose polymer- and polyvinyl alcohol (PVA) concentration on the particle size of ethyl cellulose-valsartan nanoparticles.

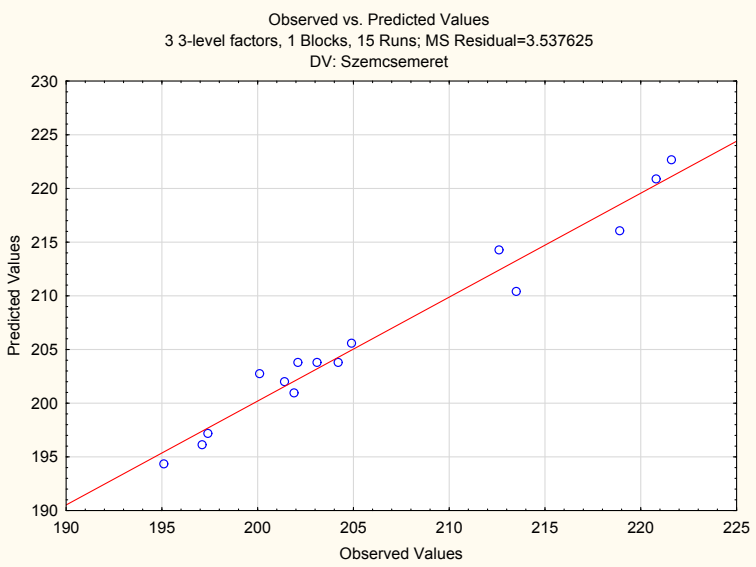

Figure S4: Correlation of the calculated and experimentally determined particle size data for poly(methyl methacrylate)-valsartan nanoparticles.

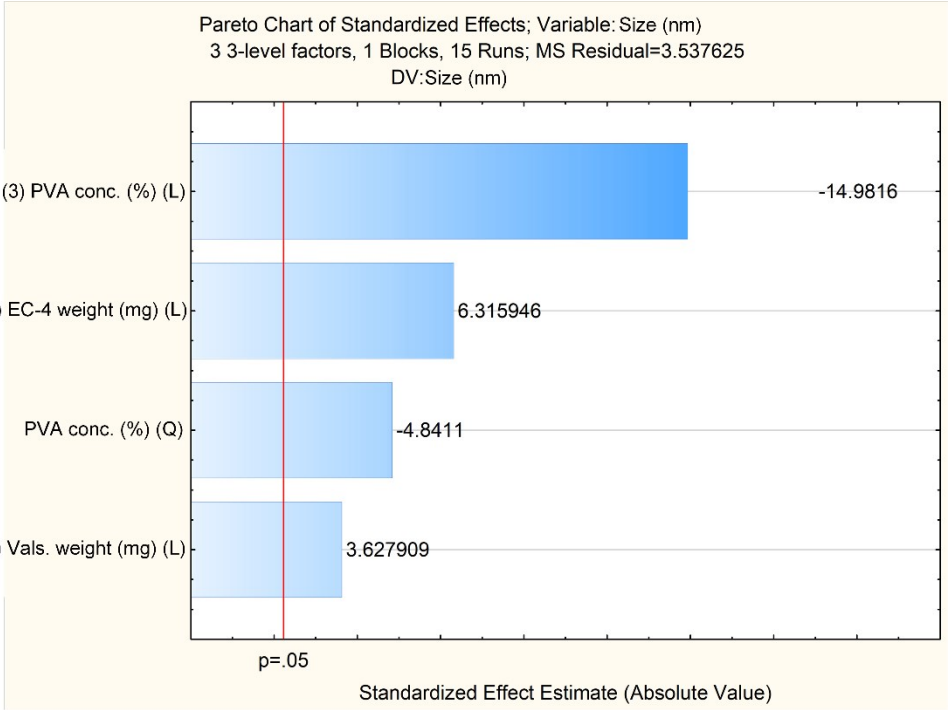

Figure S5: Statistically significant parameters in the formation of poly (methyl methacrylate)-valsartan nanoparticles.

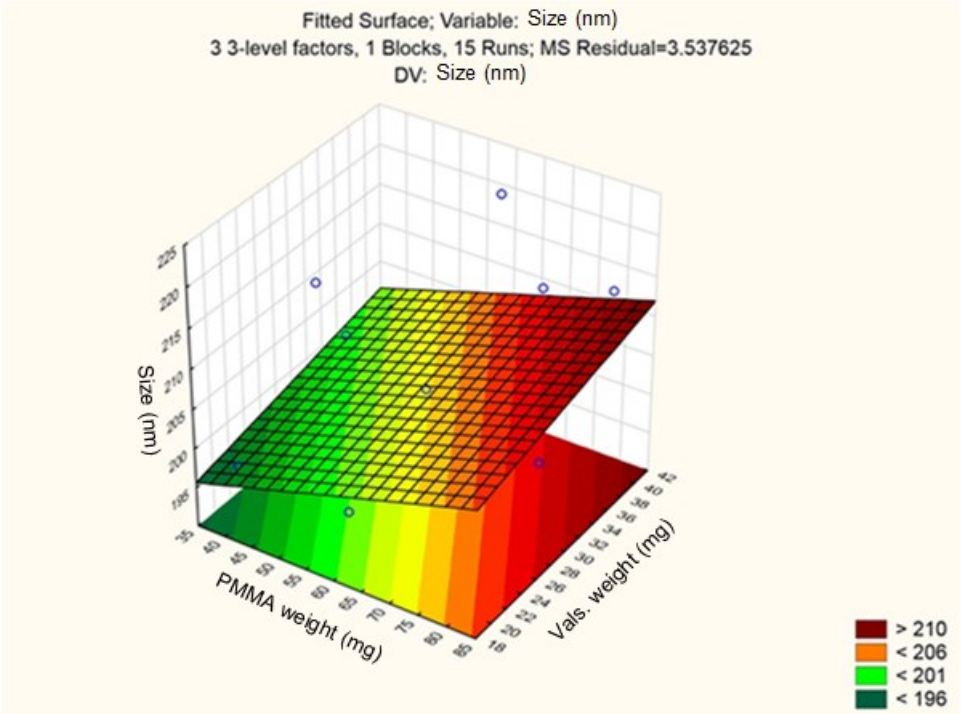

Figure S6: Effect of poly(methyl methacrylate) polymer- and valsartan concentration on the particle size of poly(methyl methacrylate)-valsartan nanoparticles.

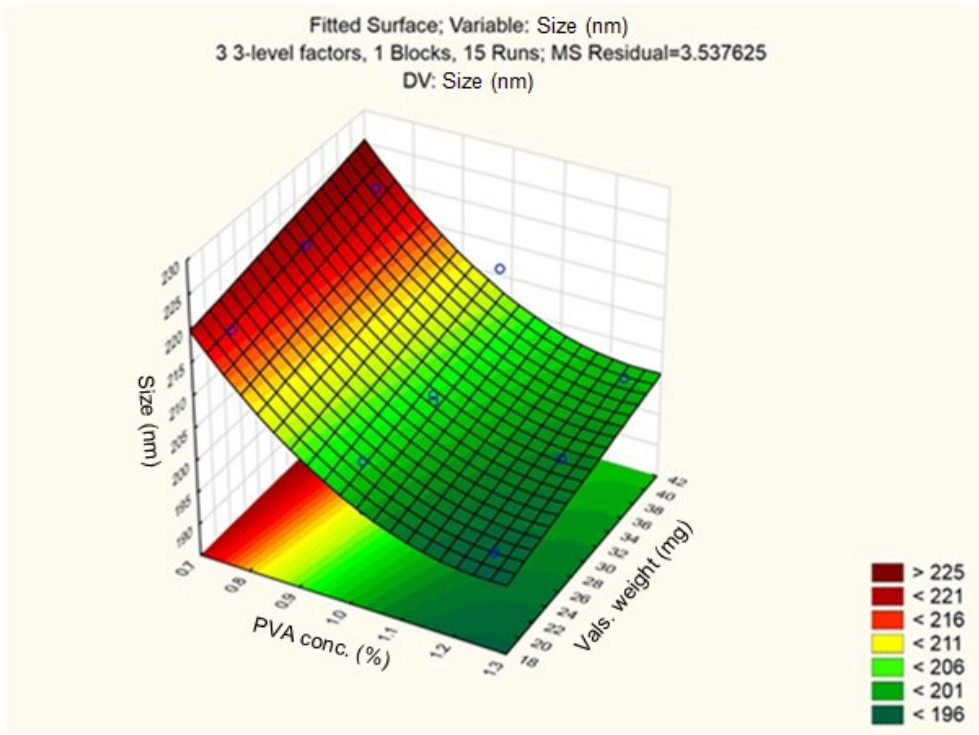

Figure S7: Influence of polyvinyl alcohol (PVA)- and valsartan concentration on the particle size of poly(methyl methacrylate)-valsartan nanoparticles.

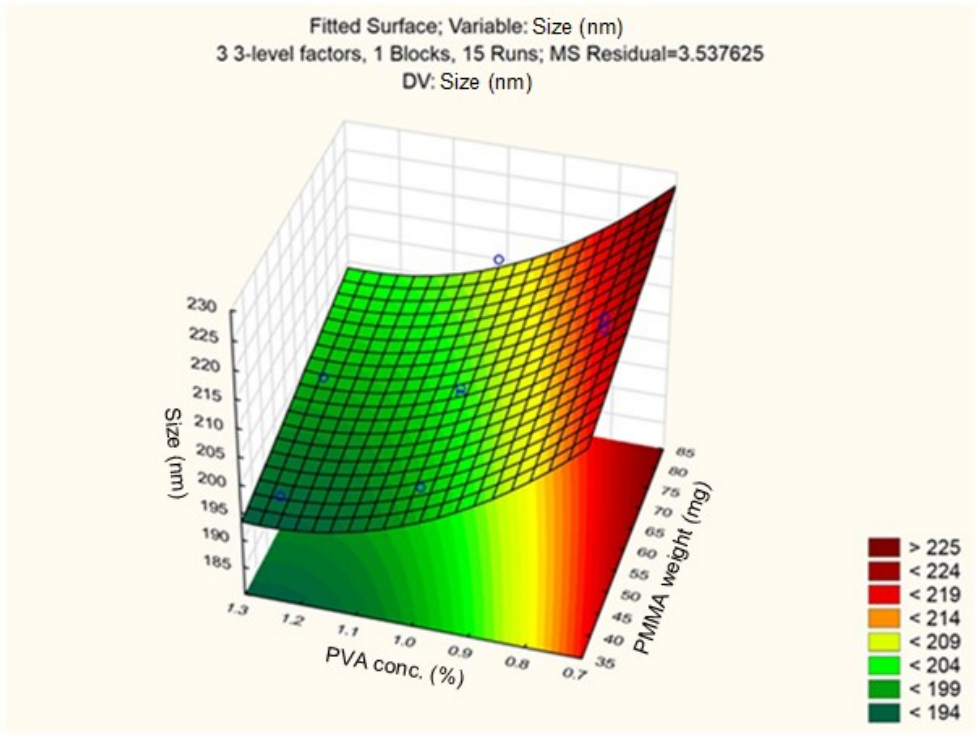

Figure S8: Effect of polyvinyl alcohol (PVA)- and poly(methyl methacrylate) concentration on the particle size of poly(methyl methacrylate)-valsartan nanoparticles.

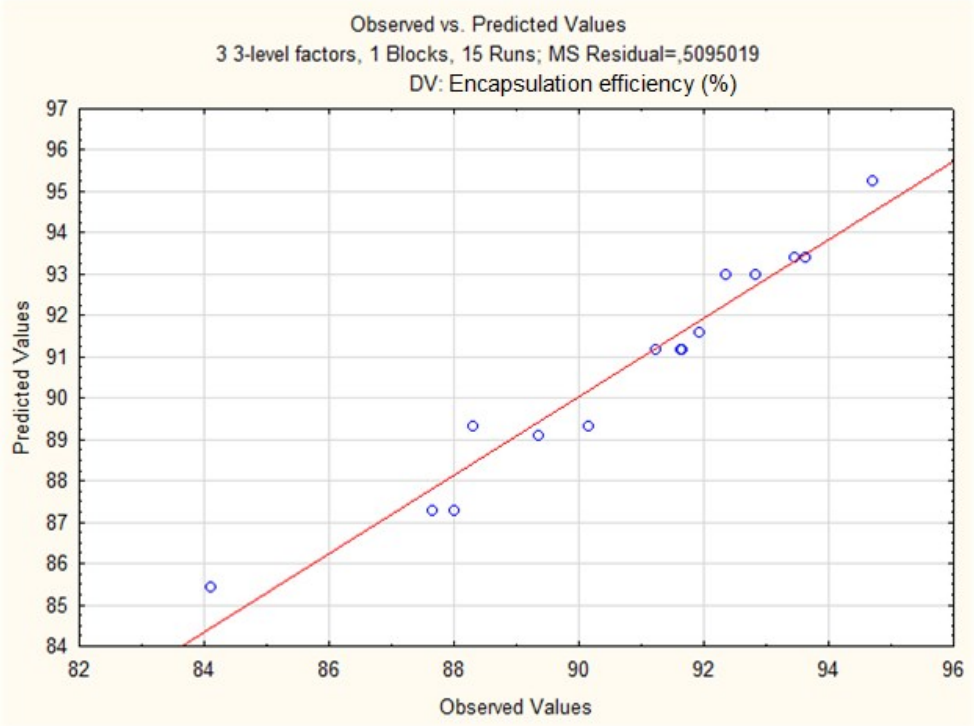

Figure S9: Correlation of the calculated and experimentally determined encapsulation efficiency data for ethyl cellulose-valsartan nanoparticles.

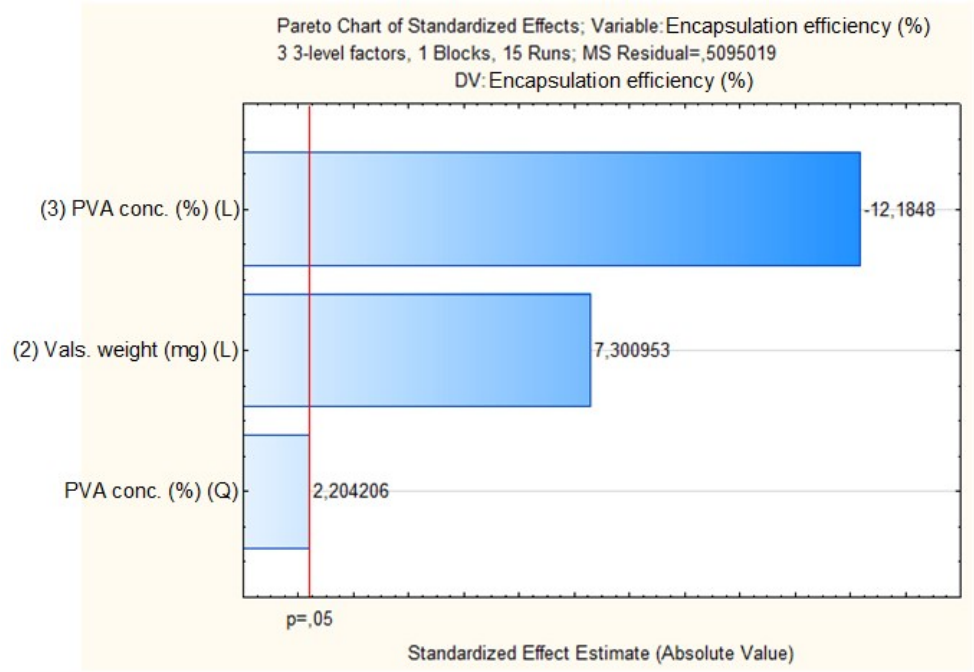

Figure S10: Statistically significant parameters in the preparation of ethyl cellulose-valsartan nanoparticles.

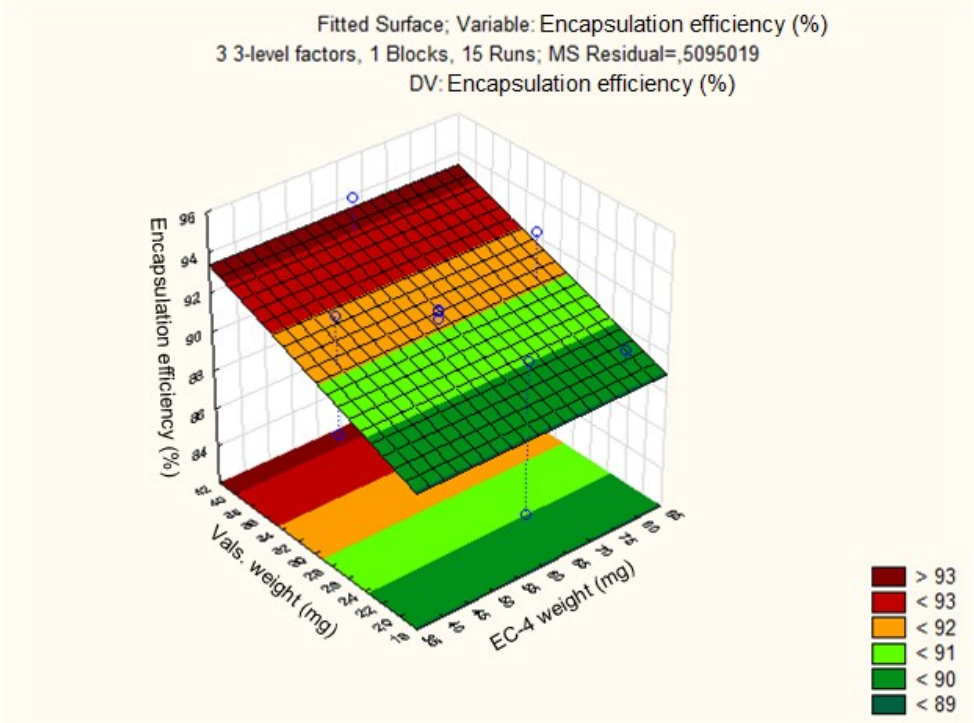

Figure S11: Influence of ethyl cellulose polymer- and valsartan concentration on the encapsulation efficiency of ethyl cellulose-valsartan nanoparticles.

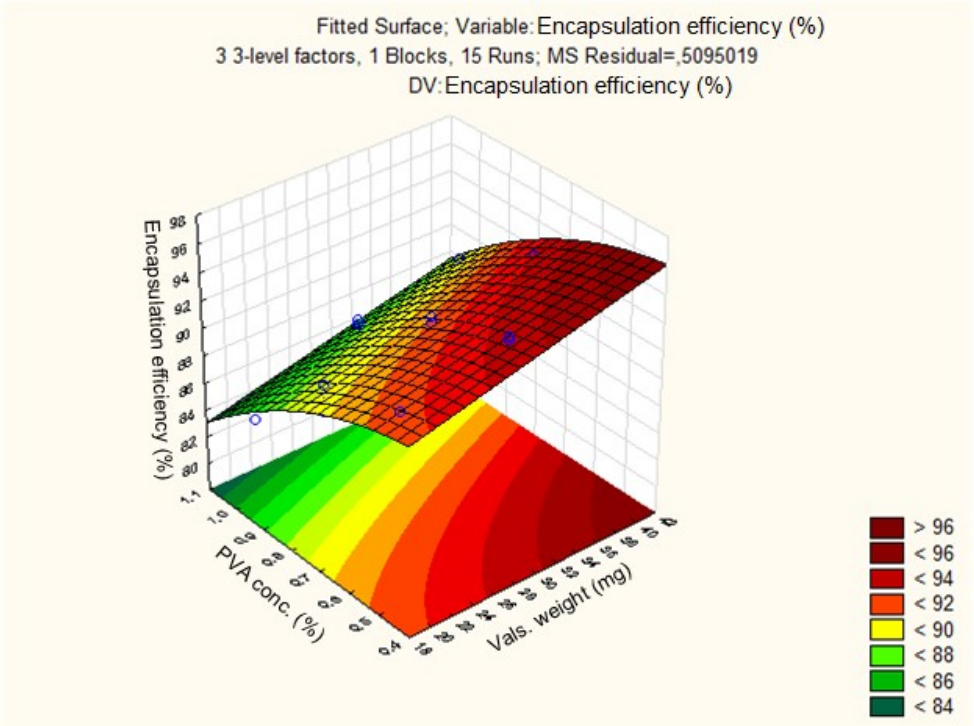

Figure S12: Encapsulation efficiency of ethyl cellulose-valsartan nanoparticles as a function of polyvinyl alcohol (PVA)- and valsartan concentration.

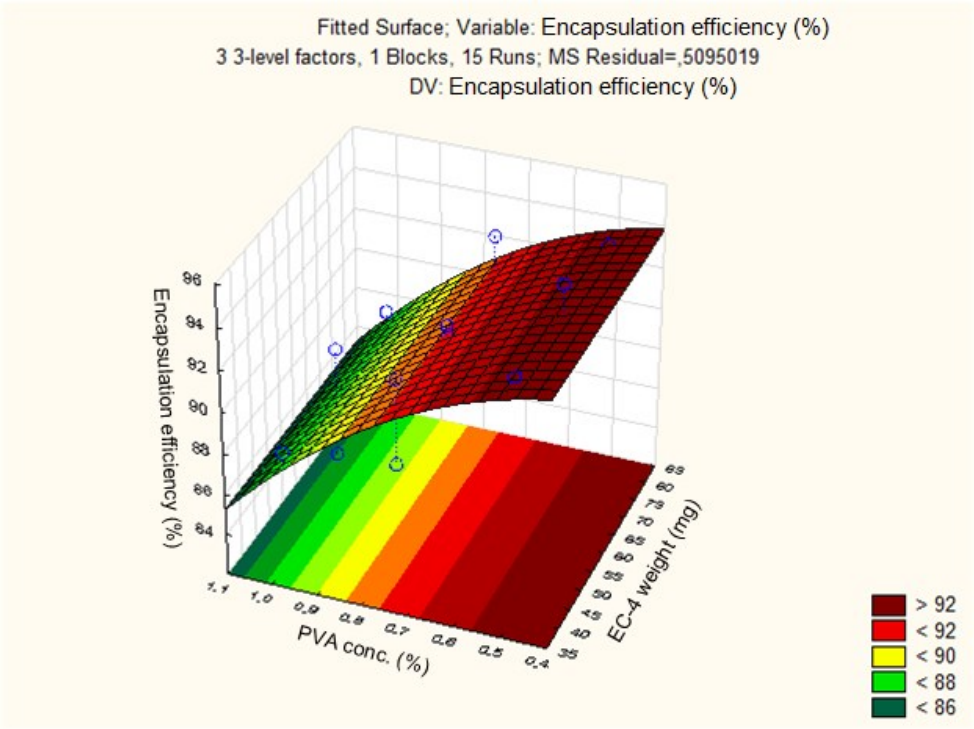

Figure S13: Encapsulation efficiency of ethyl cellulose-valsartan nanoparticles as a function of polyvinyl alcohol (PVA)- and ethyl cellulose concentration.

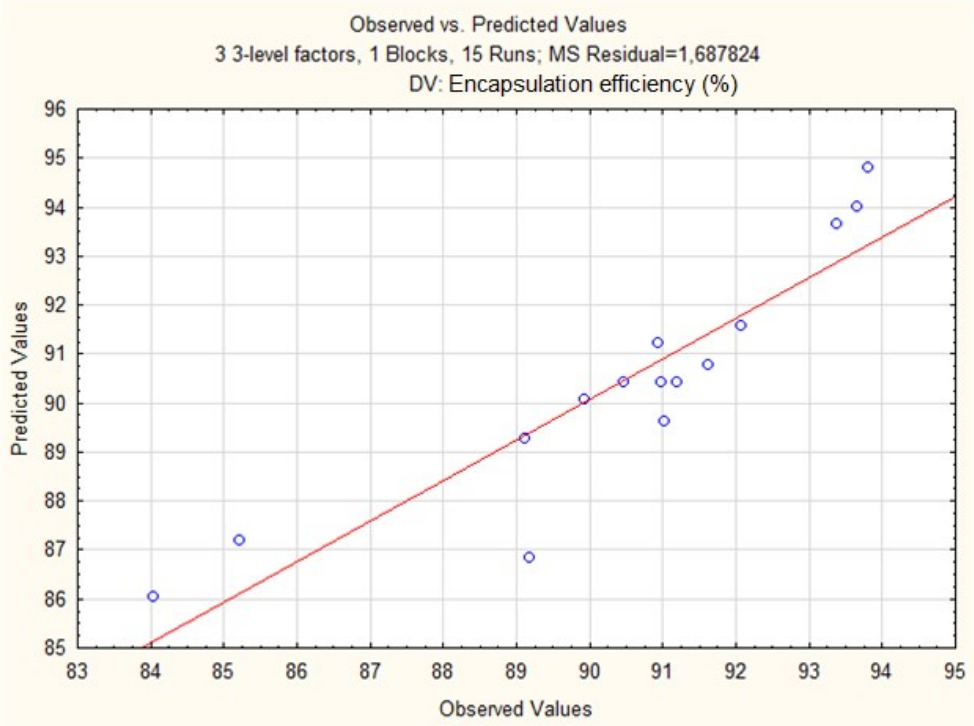

Figure S14: Correlation of the calculated and experimentally determined encapsulation efficiency data for poly(methyl methacrylate)-valsartan nanoparticles.

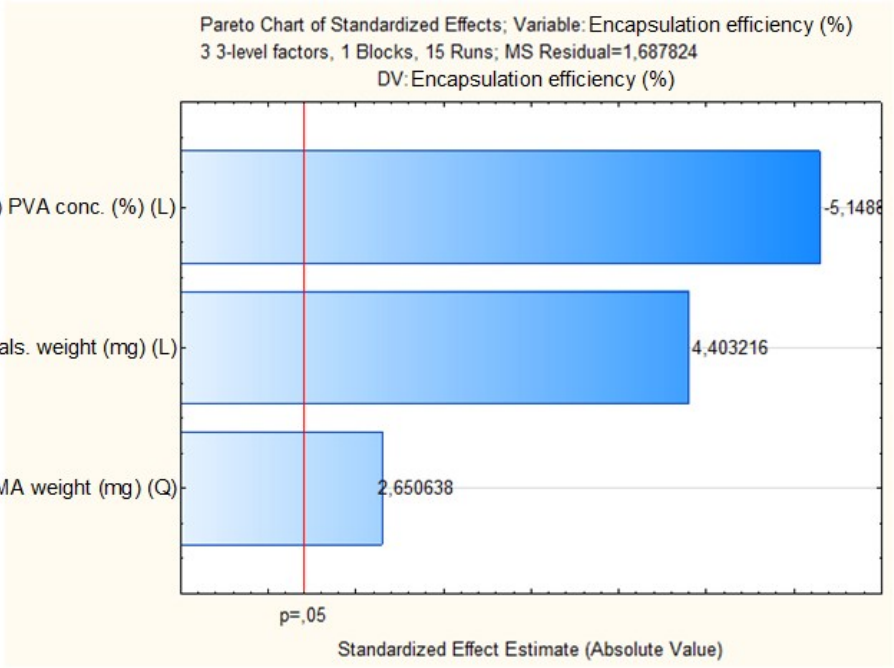

Figure S15: Statistically significant parameters in formation of poly(methyl methacrylate)-valsartan nanoparticles.

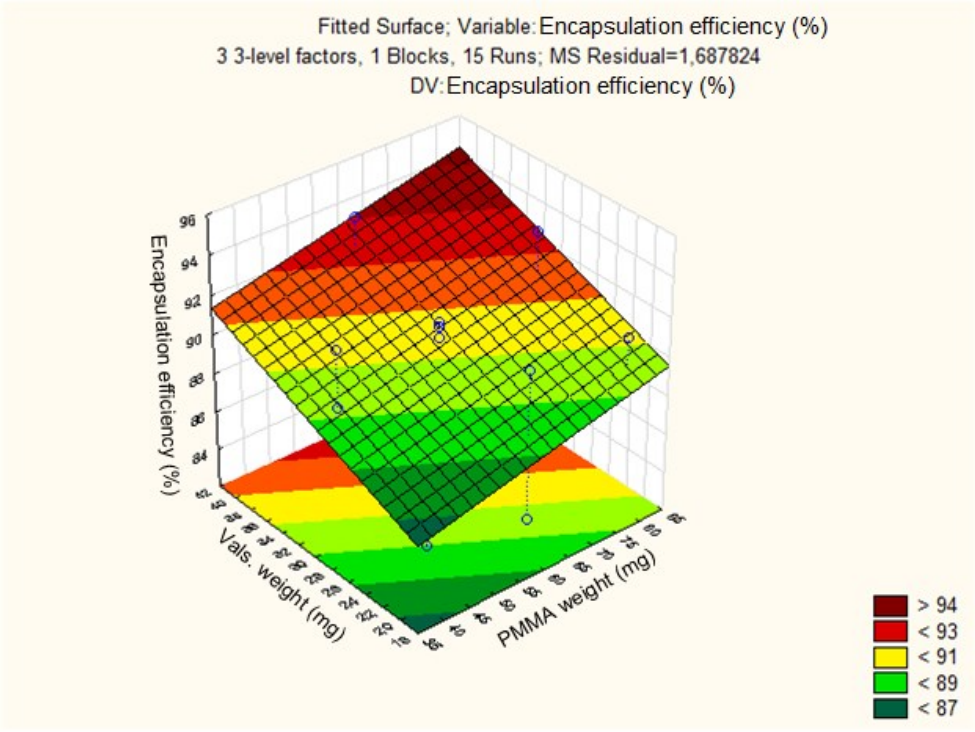

Figure 16: Influence of poly(methyl methacrylate) polymer- and valsartan concentration on the encapsulation efficiency of poly(methyl methacrylate)-valsartan nanoparticles.

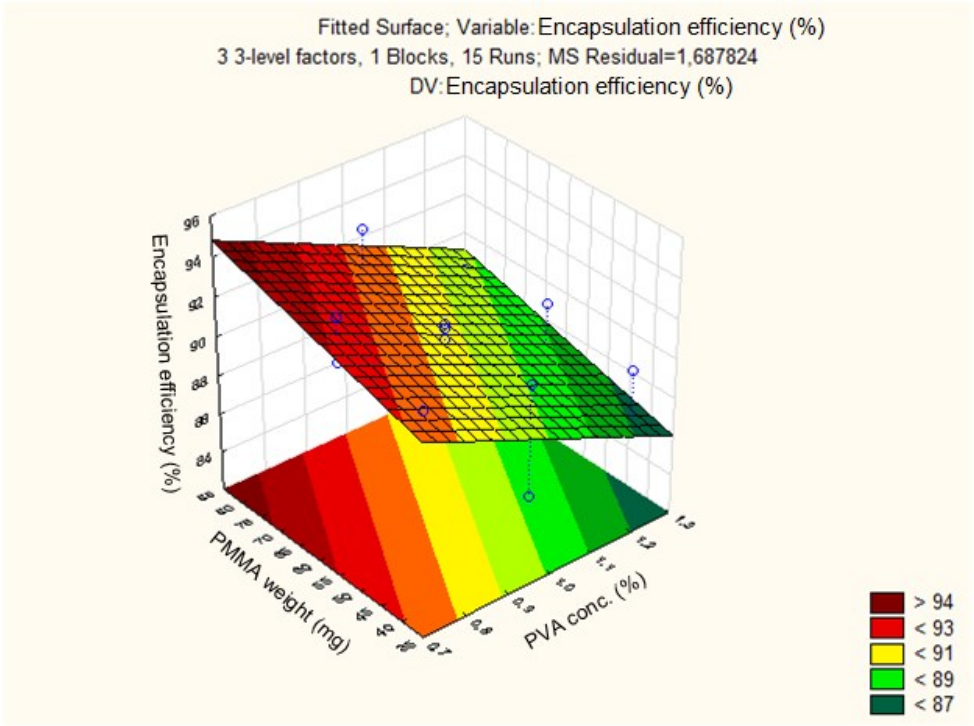

Figure 17: Effect of poly(methyl methacrylate) polymer- and polyvinyl alcohol (PVA) concentration on the encapsulation efficiency of poly(methyl methacrylate)-valsartan nanoparticles.

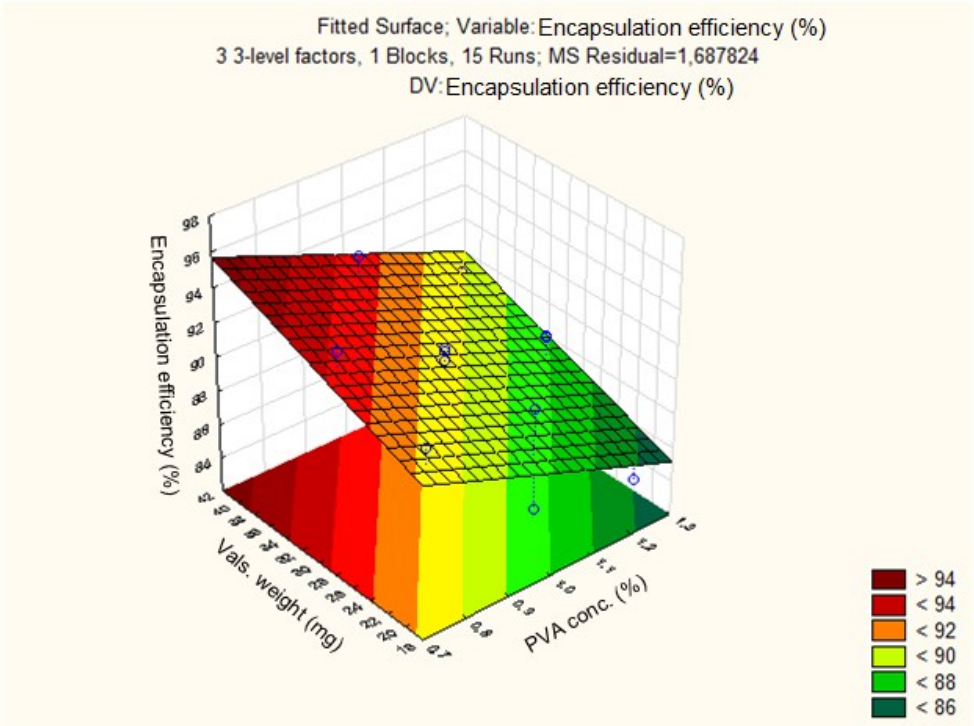

Figure 18: Effect of valsartan- and polyvinyl alcohol (PVA) concentration on the encapsulation efficiency of poly(methyl methacrylate)-valsartan nanoparticles.

Table I.: Variables of experimental design of ethyl cellulose-valsartan nanoparticles prepared by single emulsion-solvent evaporation method and the measured average particle sizes.

	3 factor Box-Behnken design, 1 block , 15 runs			
Standard Run	**EC-4 quantity (mg)**	**valsartan quantity (mg)**	**PVA conc. (%)**	**Average particle size (nm)**
14	60.00	30.00	0.75	183.4
5	40.00	30.00	1.00	160.2
9	60.00	20.00	1.00	168.4
4	40.00	30.00	0.50	197.2
13	60.00	20.00	0.50	207.8
15	80.00	40.00	0.75	189.3
3	60.00	30.00	0.75	184.5
7	60.00	30.00	0.75	184.3
1	40.00	40.00	0.75	177.6
12	40.00	20.00	0.75	175.4
8	60.00	40.00	1.00	166.3
11	80.00	30.00	1.00	170.3
2	80.00	20.00	0.75	183.8
10	60.00	40.00	0.50	207.5
6	80.00	30.00	0.50	212.7

Table II.: Variables of experimental design of poly(methyl methacrylate)-valsartan nanoparticles prepared by single emulsion-solvent evaporation method and the measured average particle sizes.

	3 factor Box-Behnken design, 1 block , 15 runs			
Standard Run	**PMMA quantity (mg)**	**valsartan quantity (mg)**	**PVA conc. (%)**	**Average particle size (nm)**
7	40	30	1.25	195.1
11	60	20	1.25	197.1
8	80	30	1.25	200.1
9	60	20	0.75	218.9
4	80	40	1	213.5
12	60	40	1.25	201.9
14	40	30	0.75	212.6
5	40	40	1	201.4
3	60	40	0.75	220.8
10	60	30	1	204.2
15	80	30	0.75	221.6
6	40	20	1	197.4
1	60	30	1	202.1
13	80	20	1	204.9
2	60	30	1	203.1

Table III.: Variables of experimental design of ethyl cellulose-valsartan nanoparticles prepared by single emulsion-solvent evaporation method and encapsulation efficiency data.

	3 factor Box-Behnken design, 1 block , 15 runs			
Standard Run	**EC-4 quantity (mg)**	**valsartan quantity (mg)**	**PVA conc. (%)**	**Encapsulation efficiency (%)**
14	60.00	30.00	0.75	91.65
5	40.00	30.00	1.00	87.65
9	60.00	20.00	1.00	84.10
4	40.00	30.00	0.50	93.62
13	60.00	20.00	0.50	91.93
15	80.00	40.00	0.75	92.83
3	60.00	30.00	0.75	91.63
7	60.00	30.00	0.75	91.22
1	40.00	40.00	0.75	92.36
12	40.00	20.00	0.75	85.31
8	60.00	40.00	1.00	89.35
11	80.00	30.00	1.00	88.00
2	80.00	20.00	0.75	90.15
10	60.00	40.00	0.50	94.69
6	80.00	30.00	0.50	93.46

Table IV.: Independent factors of experimental design of poly(methyl methacrylate)-valsartan nanoparticles prepared by single emulsion-solvent evaporation method and encapsulation efficiency data.

	3 factor Box-Behnken design, 1 block , 15 runs			
Standard Run	**PMMA quantity (mg)**	**valsartan quantity (mg)**	**PVA conc. (%)**	**Encapsulation efficiency (%)**
14	60.00	30.00	0.75	89.18
5	40.00	30.00	1.00	84.02
9	60.00	20.00	1.00	89.11
4	40.00	30.00	0.50	91.62
13	60.00	20.00	0.50	93.37
15	80.00	40.00	0.75	89.92
3	60.00	30.00	0.75	92.07
7	60.00	30.00	0.75	90.94
1	40.00	40.00	0.75	93.81
12	40.00	20.00	0.75	90.45
8	60.00	40.00	1.00	93.65
11	80.00	30.00	1.00	85.21
2	80.00	20.00	0.75	91.18
10	60.00	40.00	0.50	91.01
6	80.00	30.00	0.50	90.97