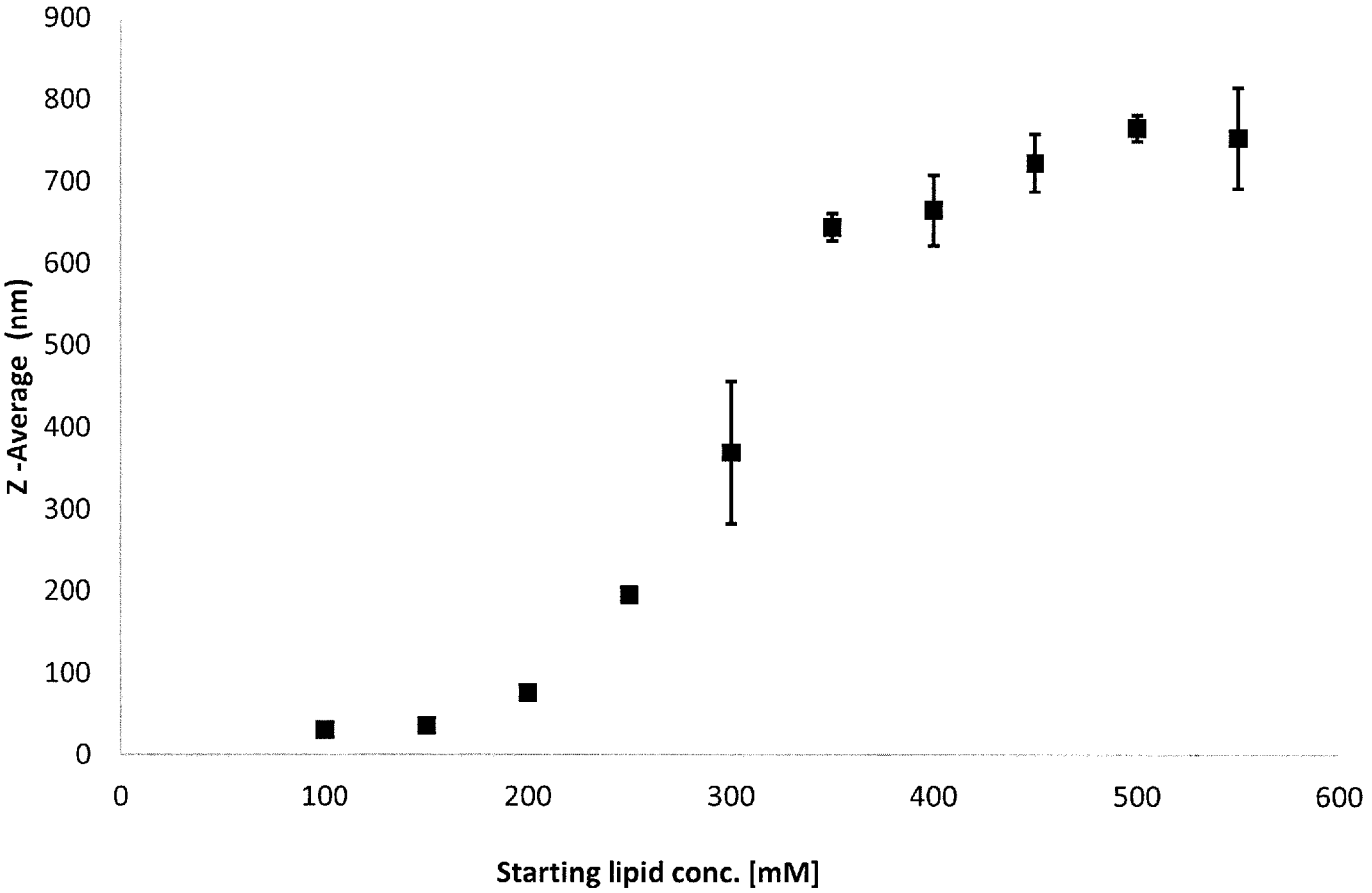

900
800
700
600
500
400
300
200
100
0
Z -Average (nm)
0
100
200
300
400
500
600
Starting lipid conc. [mM]

Figure 1

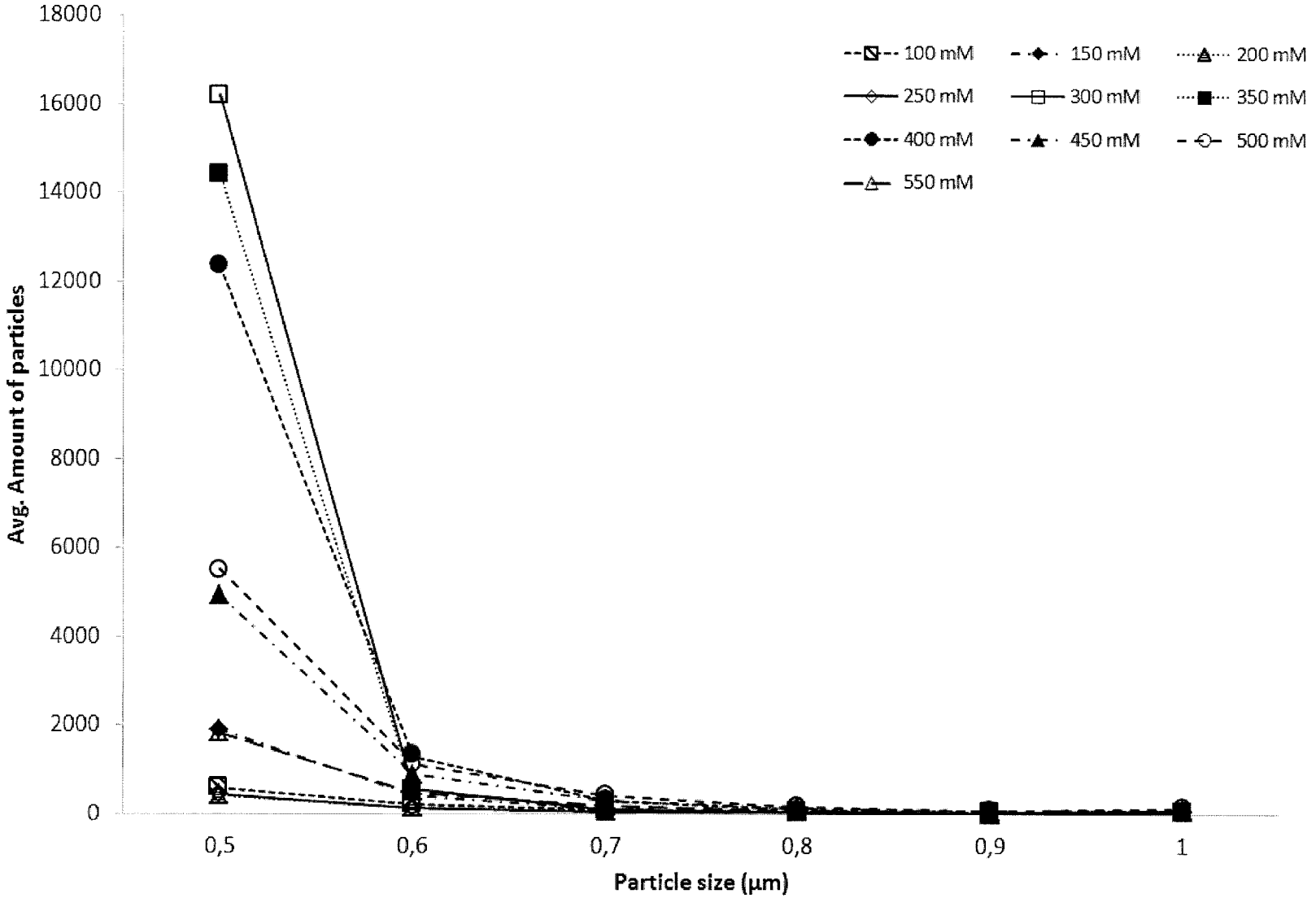

18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Avg. Amount of particles
0,5
0,6
0,7
0,8
0,9
1
Particle size (µm)
100 mM
150 mM
200 mM
250 mM
300 mM
350 mM
400 mM
450 mM
500 mM
550 mM

Figure 2

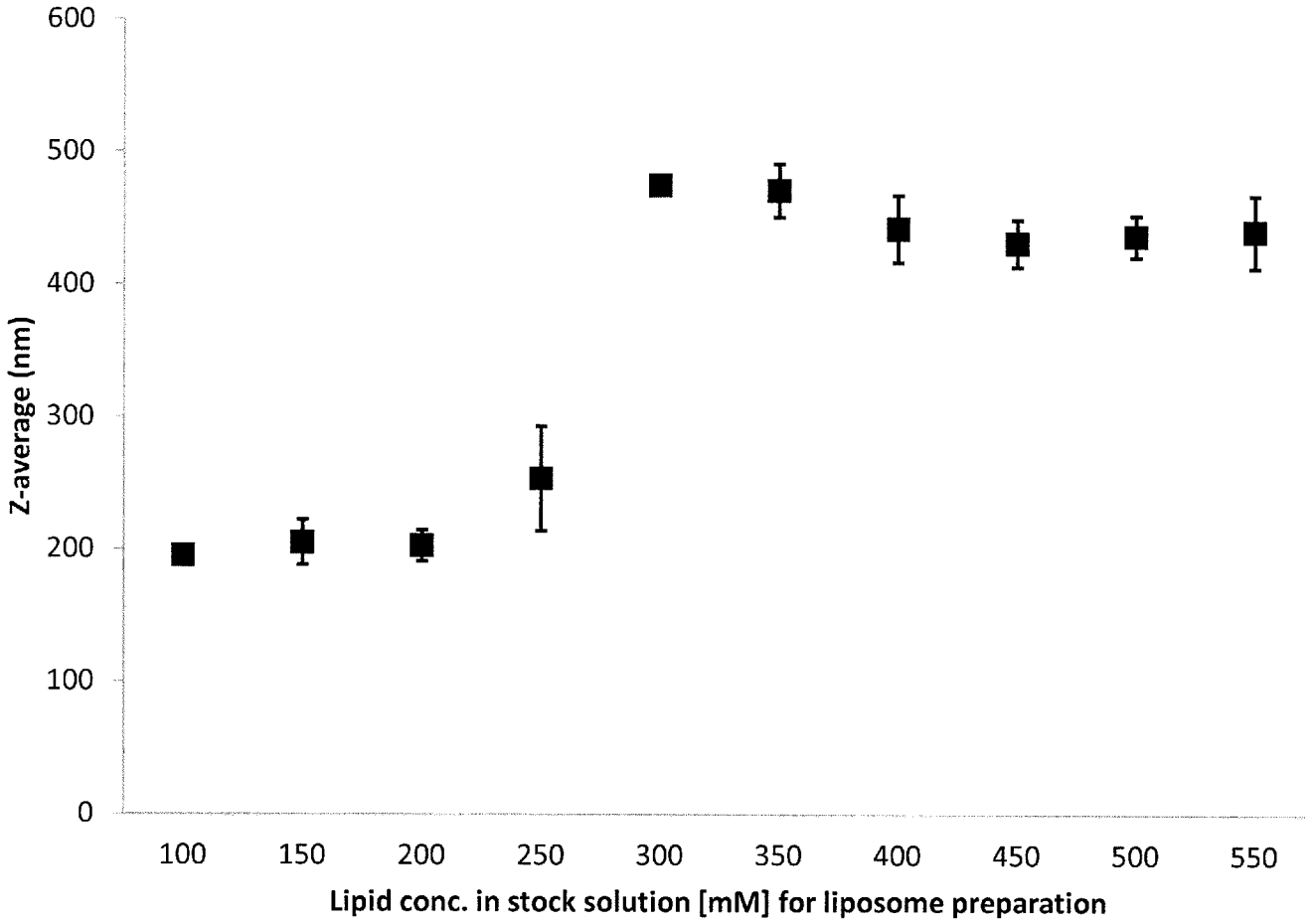

600
500
400
300
200
100
0
Z-average (nm)
100
150
200
250
300
350
400
450
500
550
Lipid conc. in stock solution [mM] for liposome preparation

Figure 3

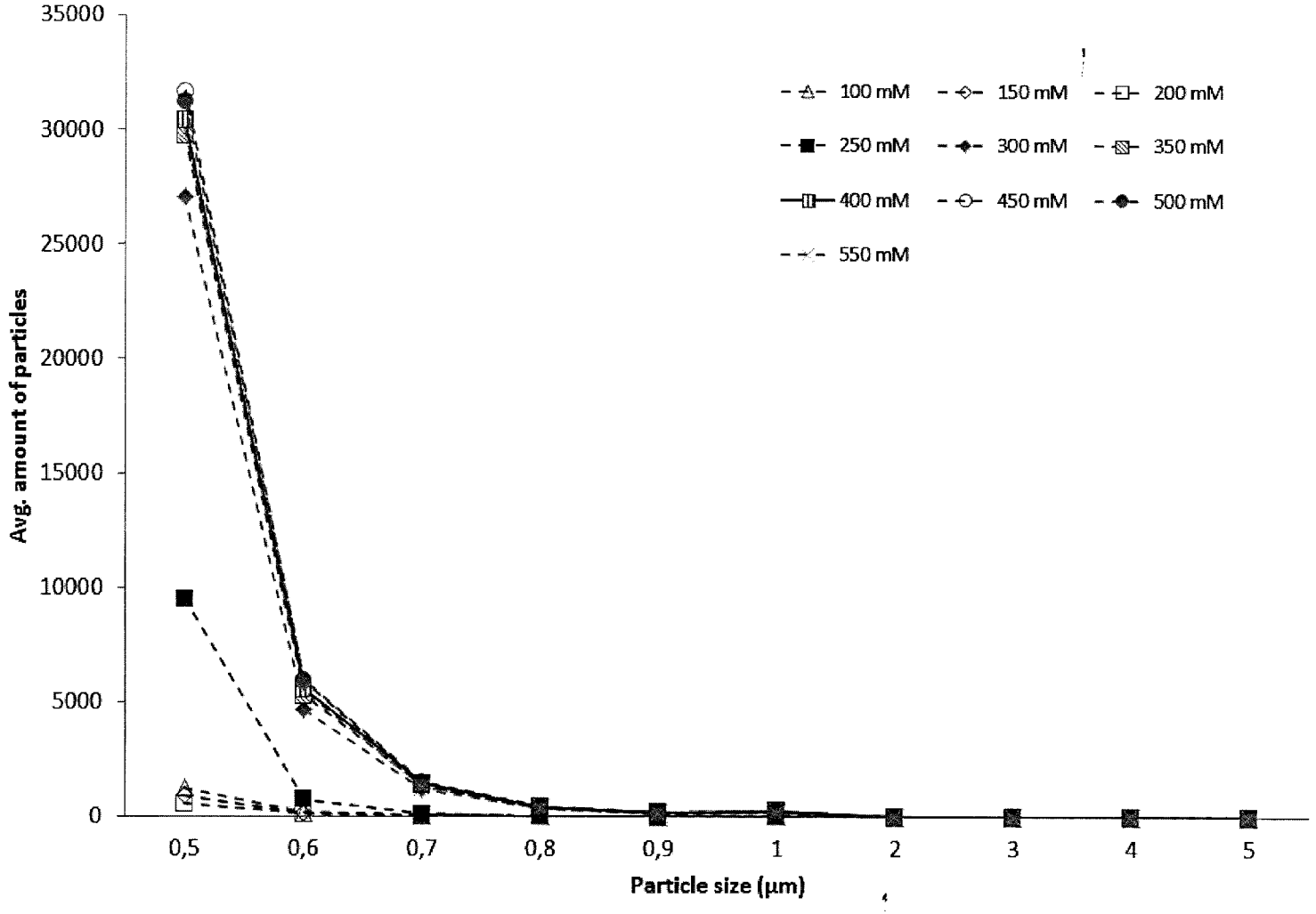

35000
30000
25000
20000
15000
10000
5000
0
Avg. amount of particles
0,5
0,6
0,7
0,8
0,9
1
2
3
4
5
Particle size (µm)
100 mM
150 mM
200 mM
250 mM
300 mM
350 mM
400 mM
450 mM
500 mM
550 mM

Figure 4

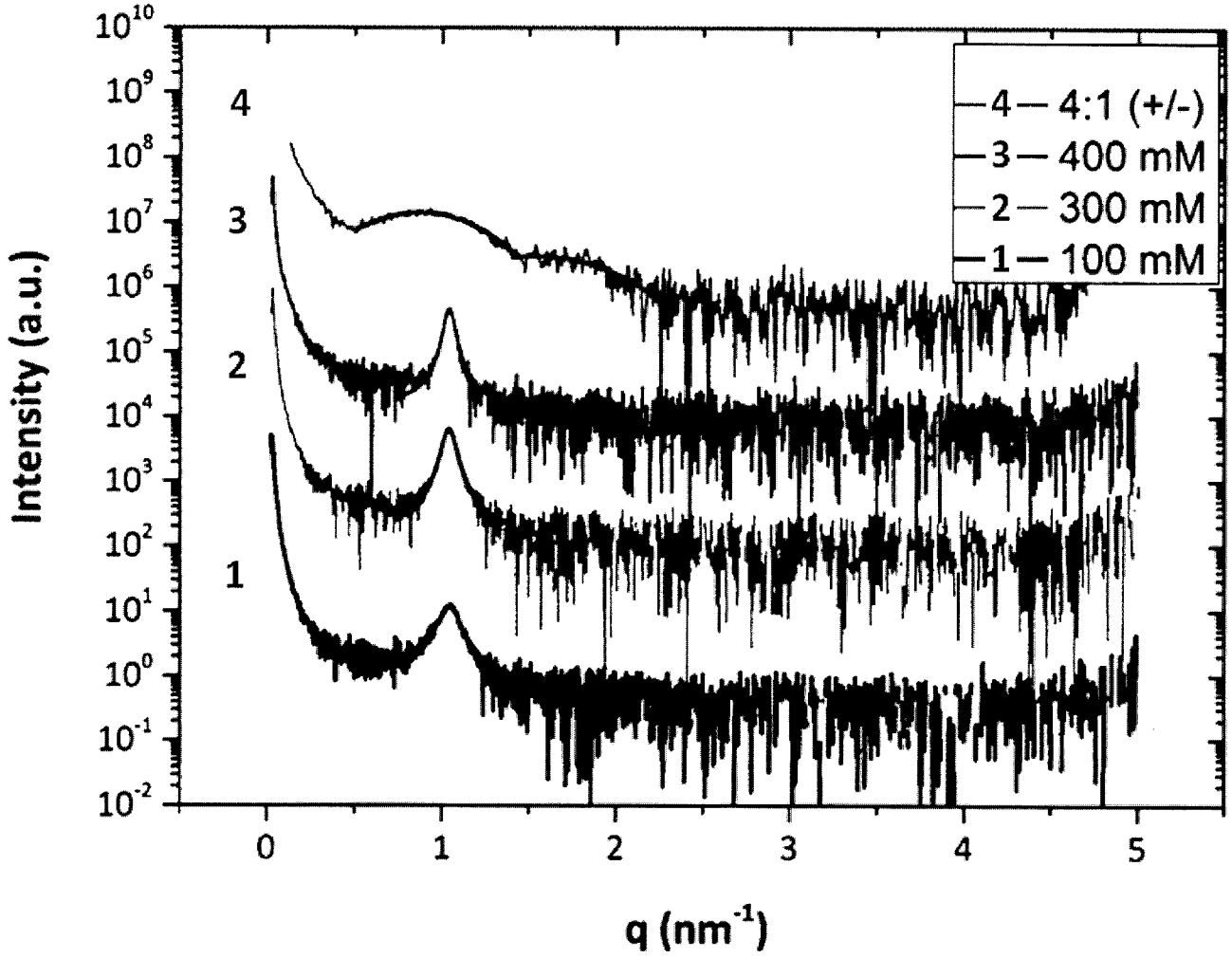


Figure 5

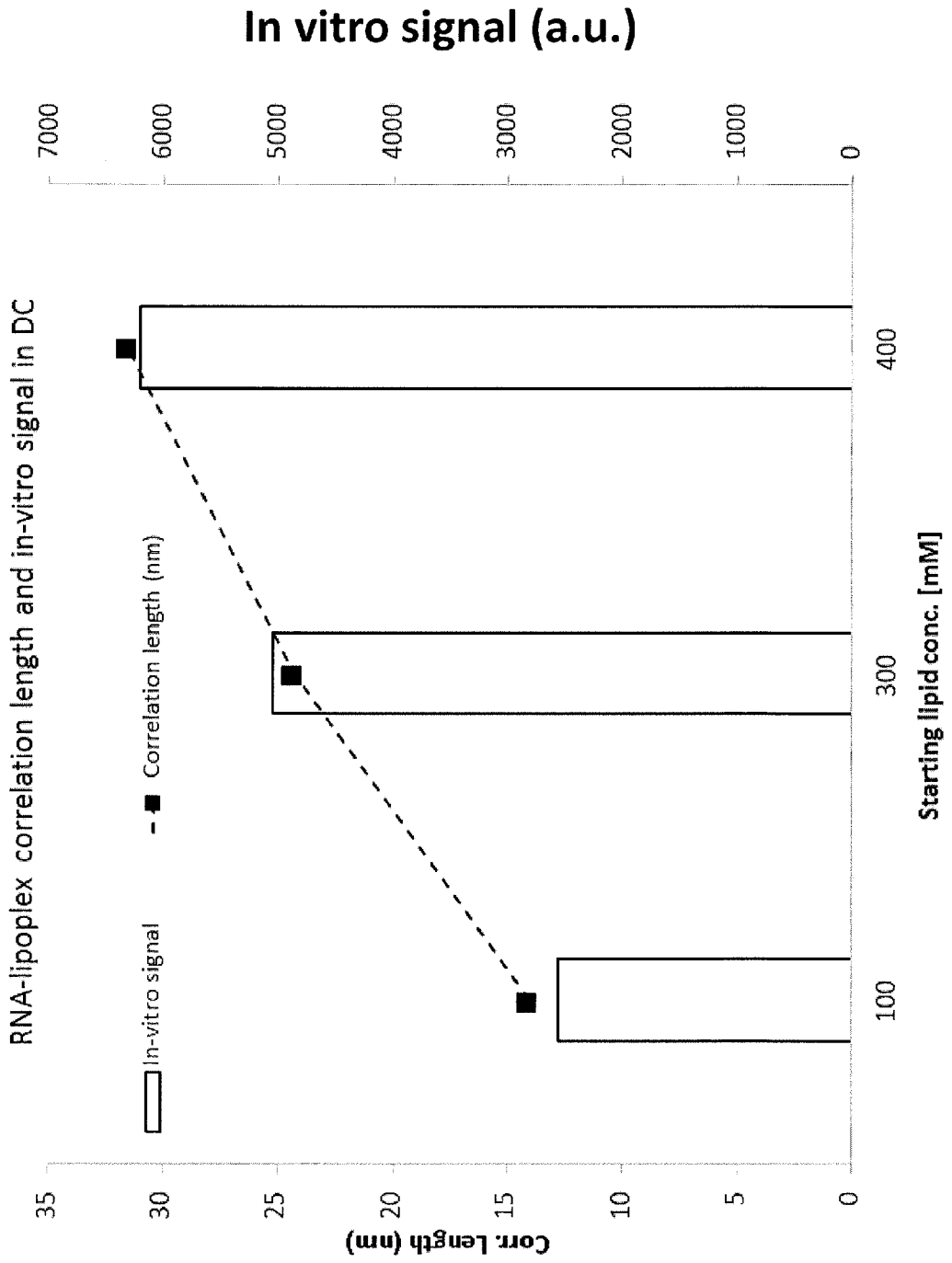

In vitro signal (a.u.)
7000
6000
5000
4000
3000
2000
1000
0
RNA-lipoplex correlation length and in-vitro signal in DC
In-vitro signal
Correlation length (nm)
35
30
25
20
15
10
5
0
Corr. Length (nm)
100
300
400
Starting lipid conc. [mM]

Figure 6

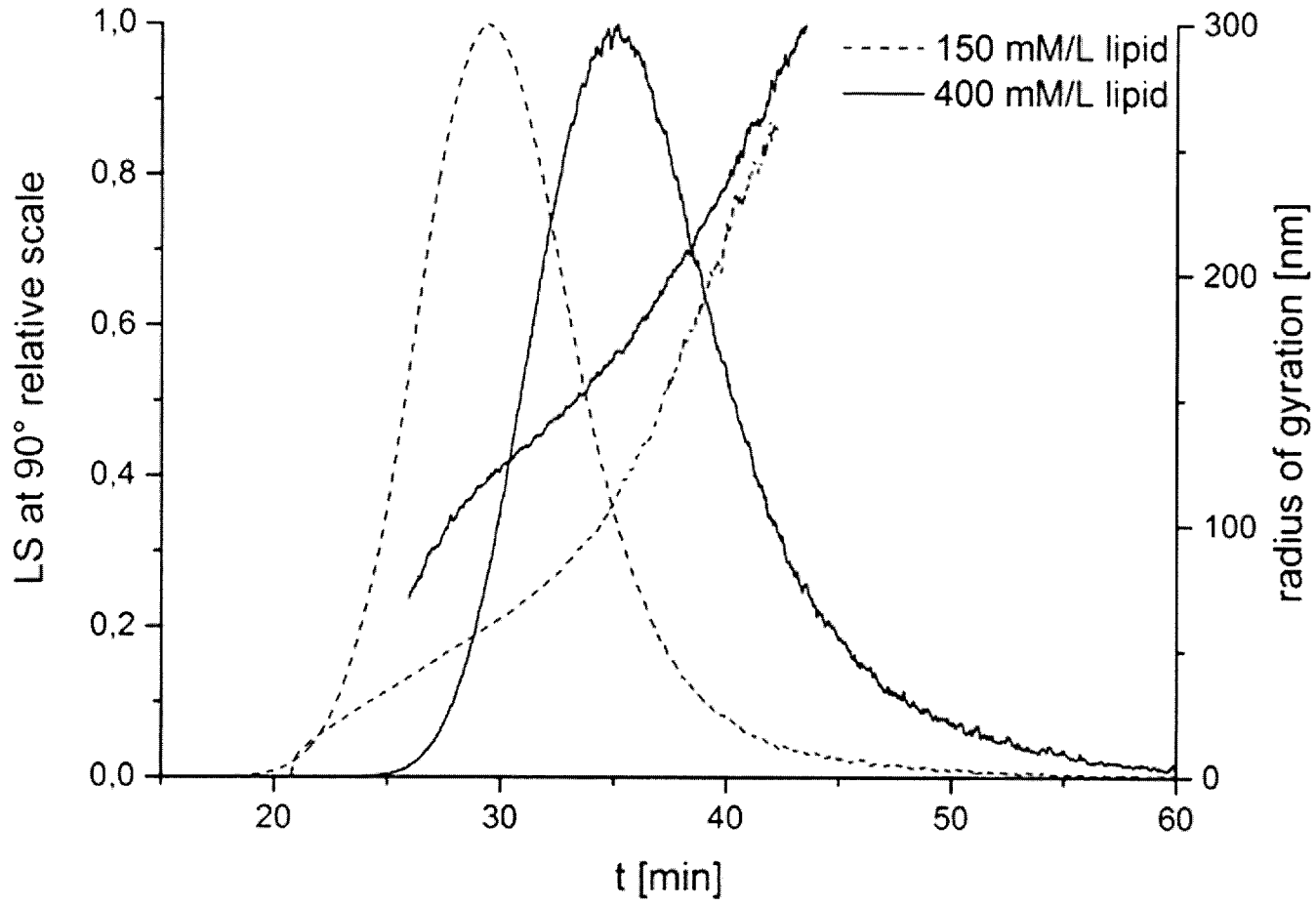

150 mM/L lipid
400 mM/L lipid
LS at 90° relative scale
radius of gyration [nm]
t [min]
1,0
0,8
0,6
0,4
0,2
0,0
300
200
100
0
20
30
40
50
60

Figure 7

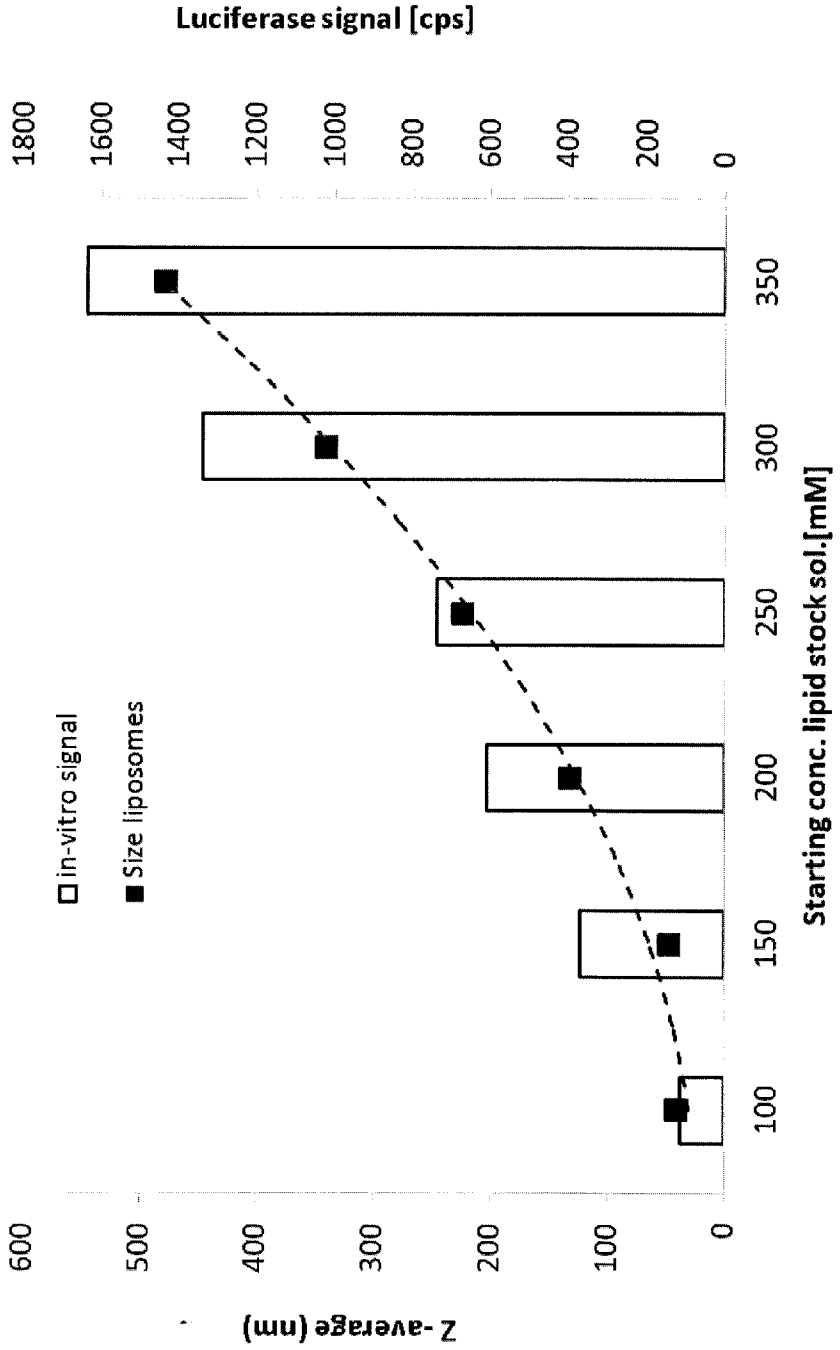

Luciferase signal [cps]
1800
1600
1400
1200
1000
800
600
400
200
0
Z -average (nm)
600
500
400
300
200
100
0
in-vitro signal
Size liposomes
100
150
200
250
300
350
Starting conc. lipid stock sol.[mM]

Figure 8

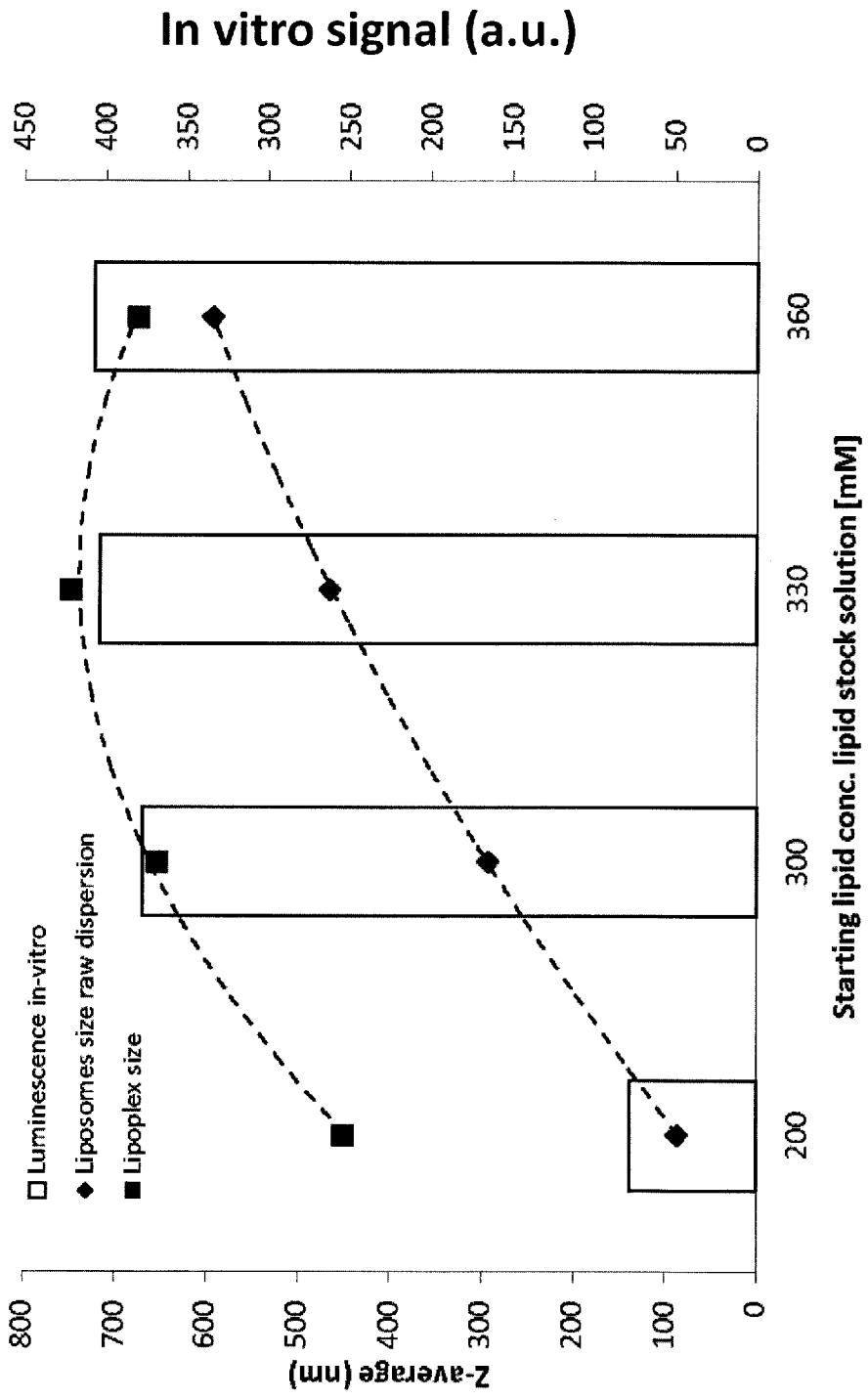

In vitro signal (a.u.)
450
400
350
300
250
200
150
100
50
0
360
330
300
200
Starting lipid conc. lipid stock solution [mM]
Luminescence in-vitro
Liposomes size raw dispersion
Lipoplex size
800
700
600
500
400
300
200
100
0
Z-average (nm)

Figure 9

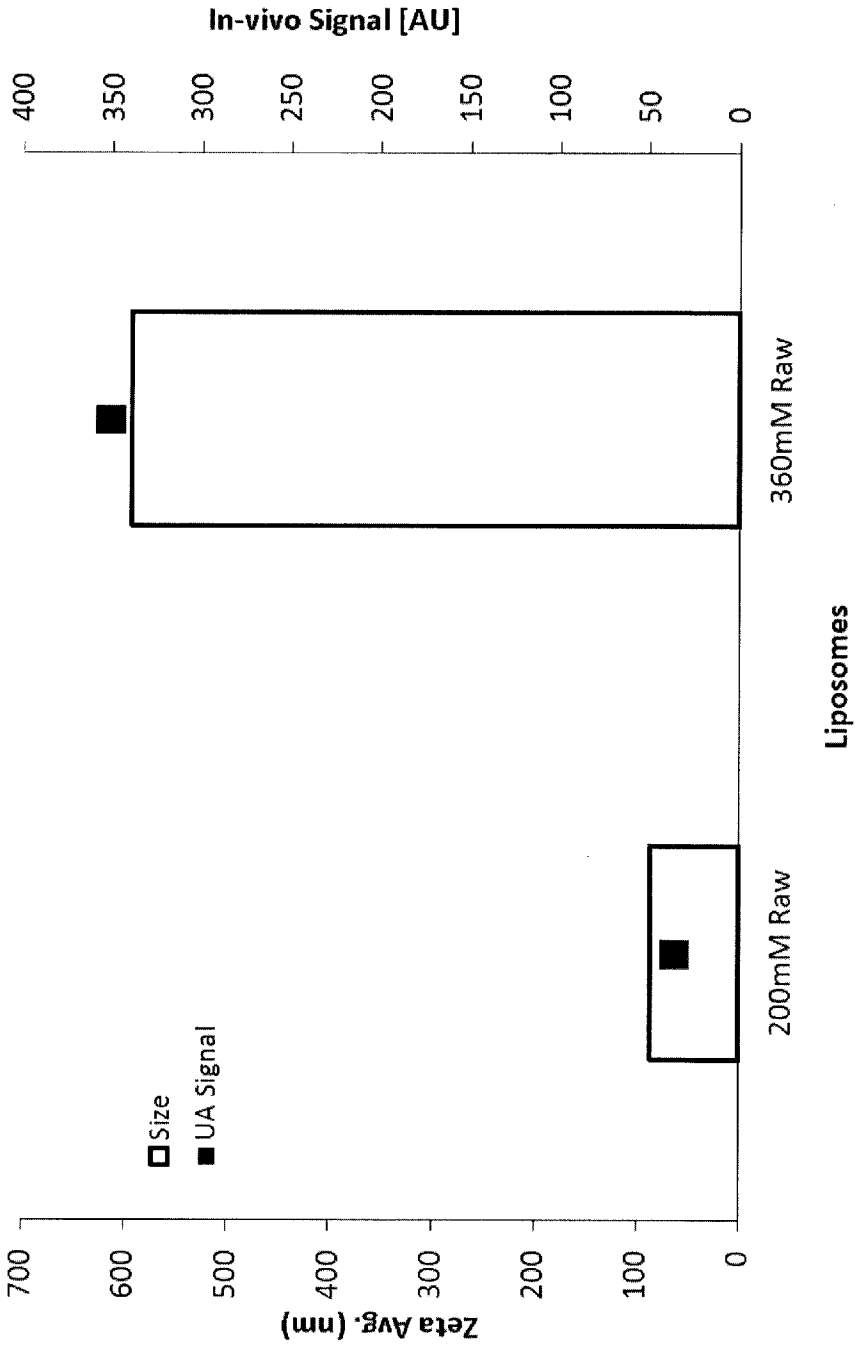

In-vivo Signal [AU]
400
350
300
250
200
150
100
50
0
360mM Raw
200mM Raw
Liposomes
Size
UA Signal
Zeta Avg. (nm)
700
600
500
400
300
200
100
0

Figure 10

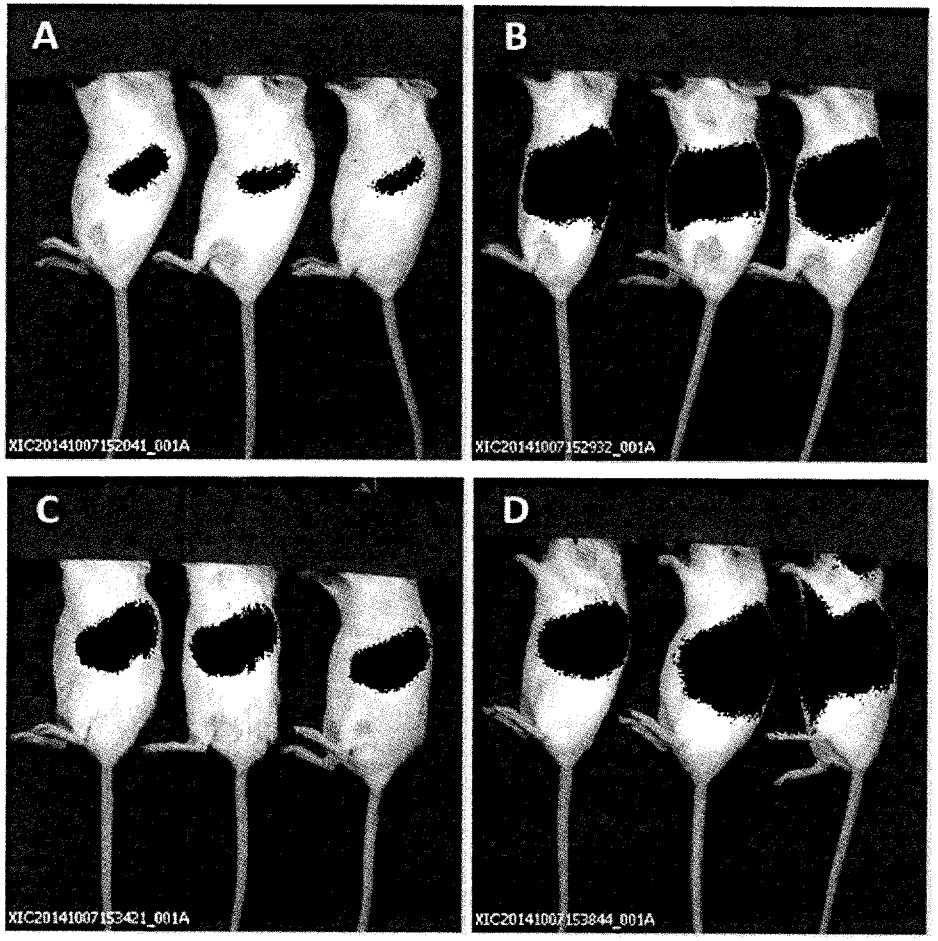

A
B
C
D
XIC20141007152041_001A
XIC20141007152932_001A
XIC20141007153421_001A
XIC20141007153844_001A

Figure 11

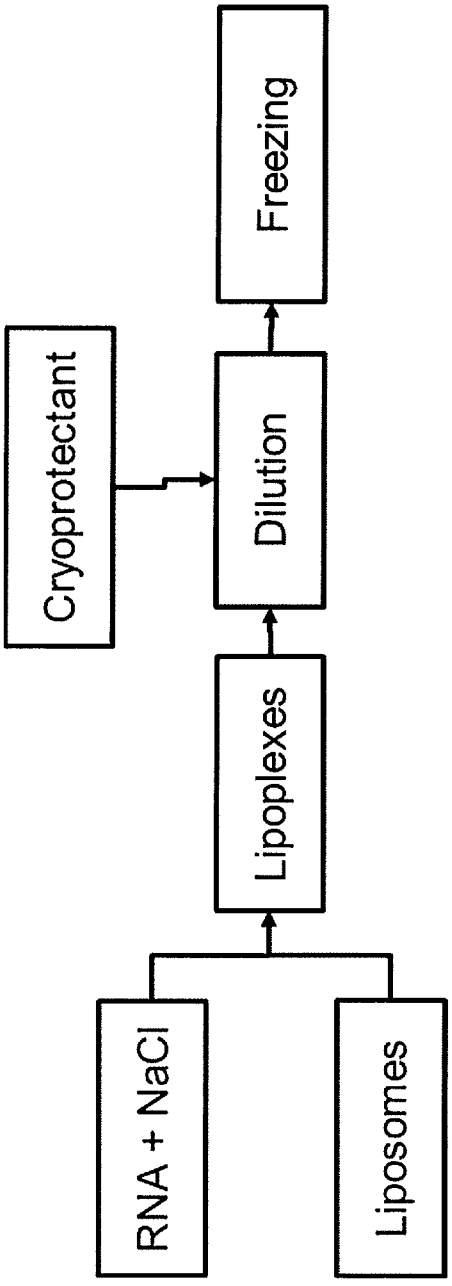

RNA + NaCl
Liposomes
Lipoplexes
Cryoprotectant
Dilution
Freezing

Figure 12

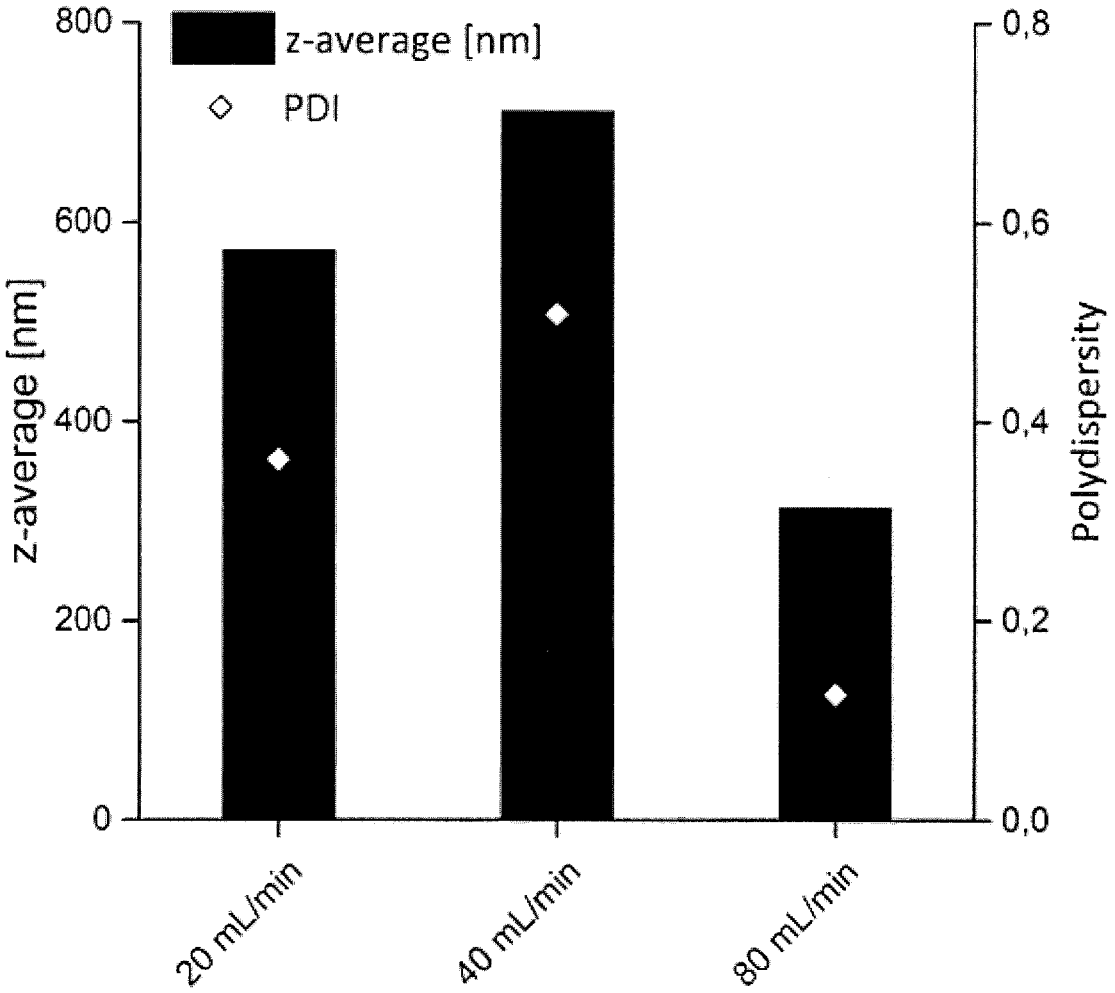

z-average [nm]
PDI
800
600
400
200
0
z-average [nm]
0,8
0,6
0,4
0,2
0,0
Polydispersity
20 mL/min
40 mL/min
80 mL/min

Figure 13

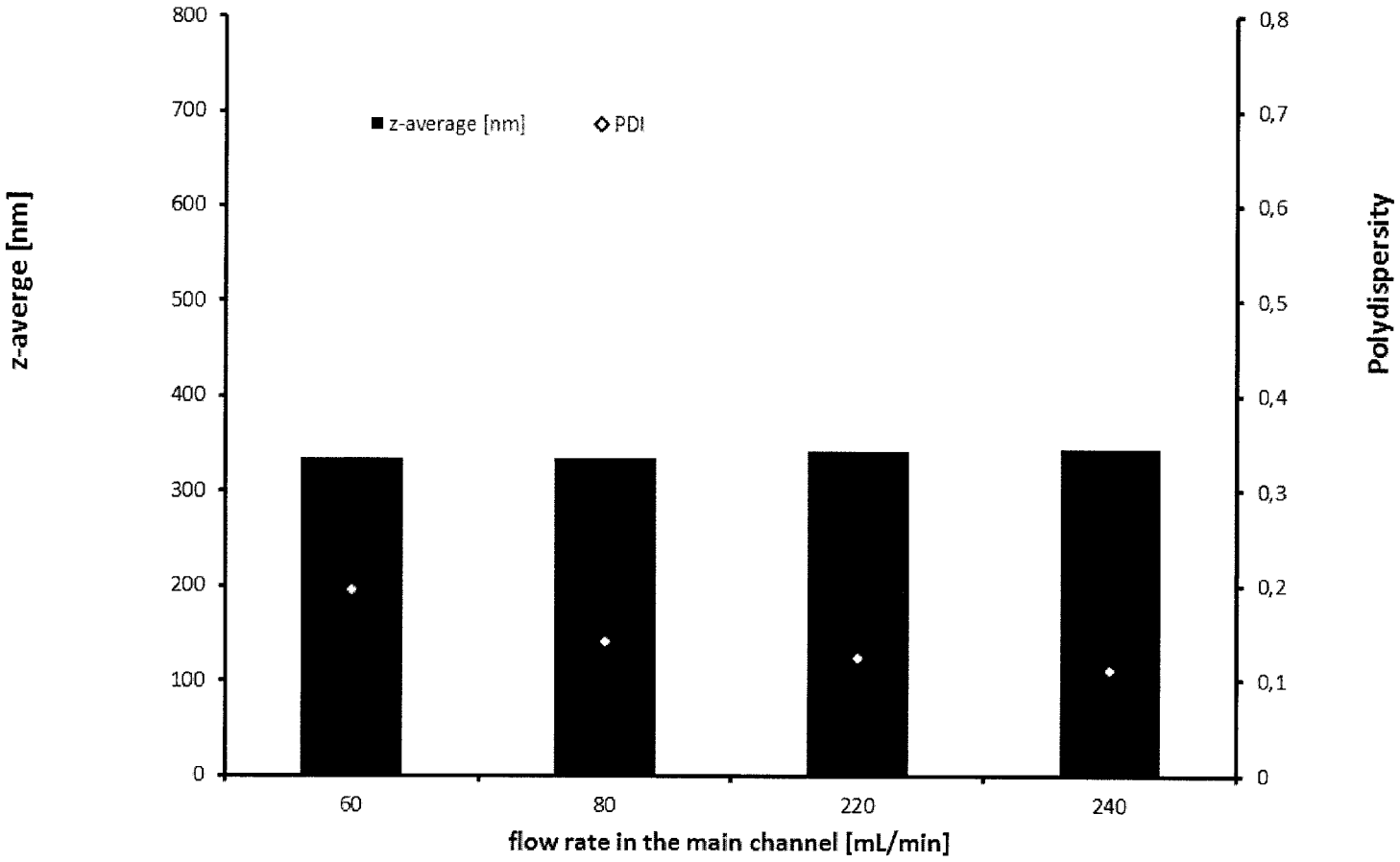

z-averge [nm]
Polydispersity
z-average [nm]
PDI
800
700
600
500
400
300
200
100
0
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0
60
80
220
240
flow rate in the main channel [mL/min]

Figure 14

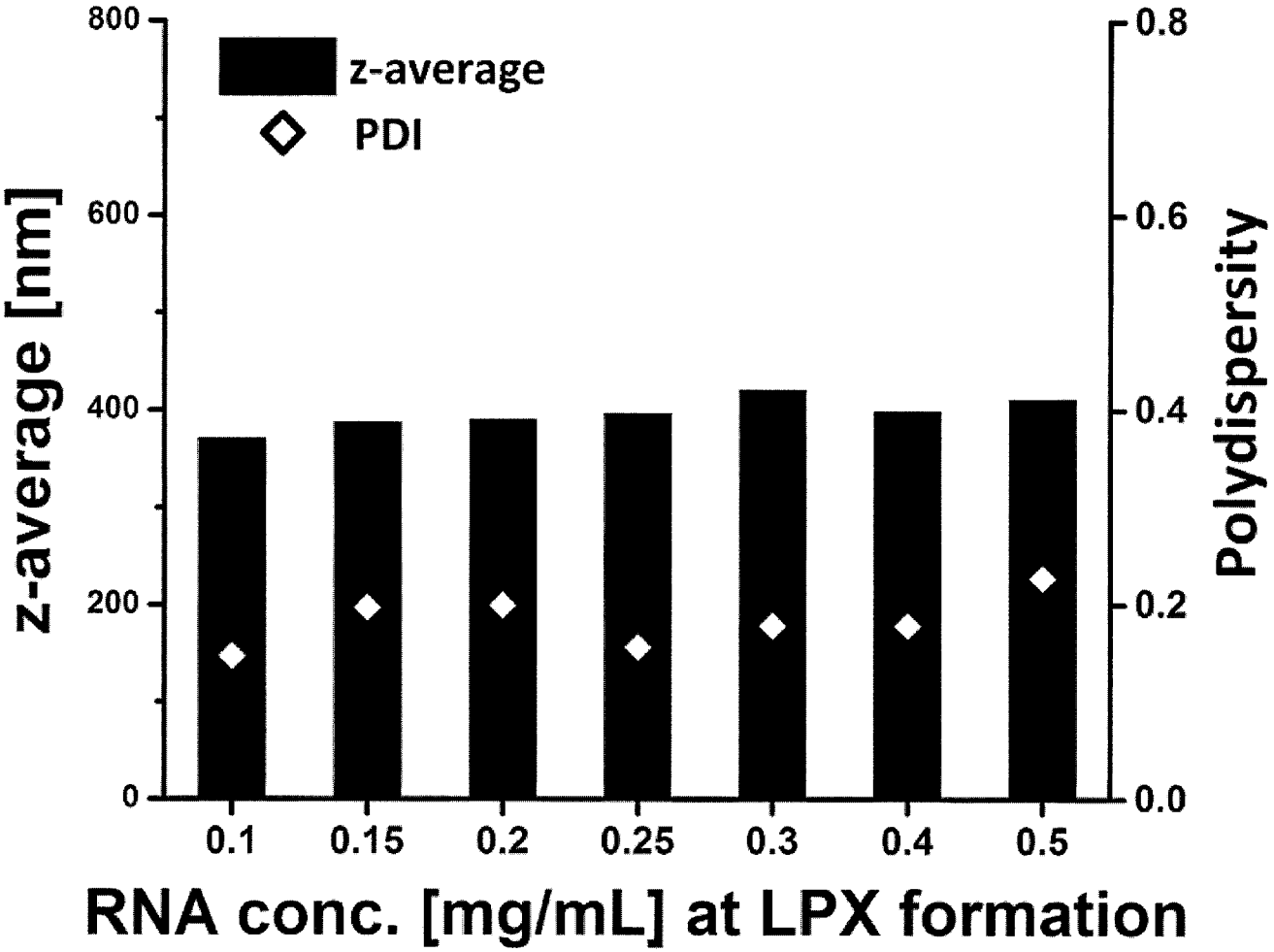

z-average
PDI
z-average [nm]
Polydispersity
800
600
400
200
0
0.8
0.6
0.4
0.2
0.0
0.1
0.15
0.2
0.25
0.3
0.4
0.5
RNA conc. [mg/mL] at LPX formation

Figure 15

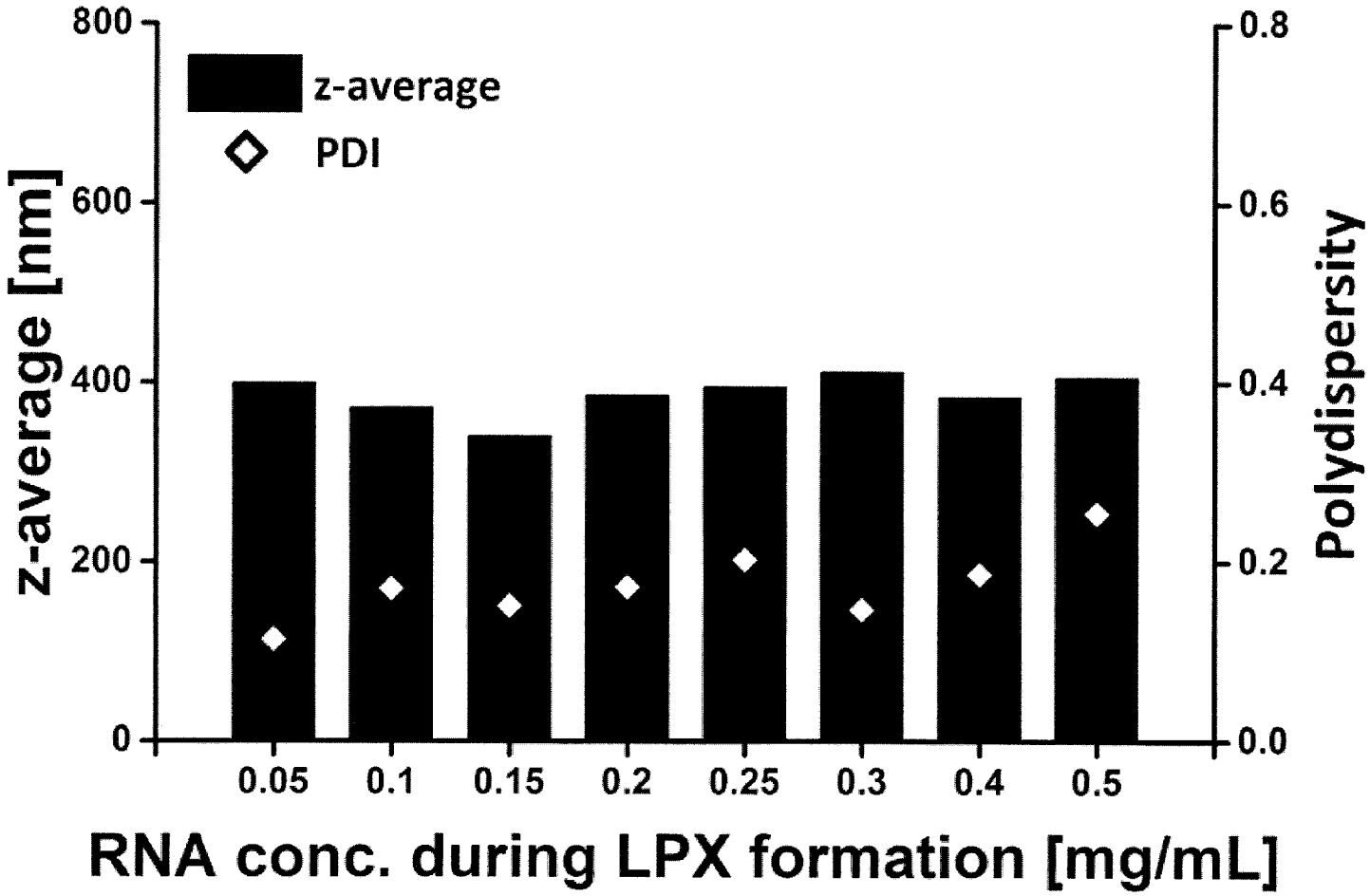

800
600
400
200
0
z-average [nm]
z-average
PDI
0.8
0.6
0.4
0.2
0.0
Polydispersity
0.05
0.1
0.15
0.2
0.25
0.3
0.4
0.5
RNA conc. during LPX formation [mg/mL]

Figure 16

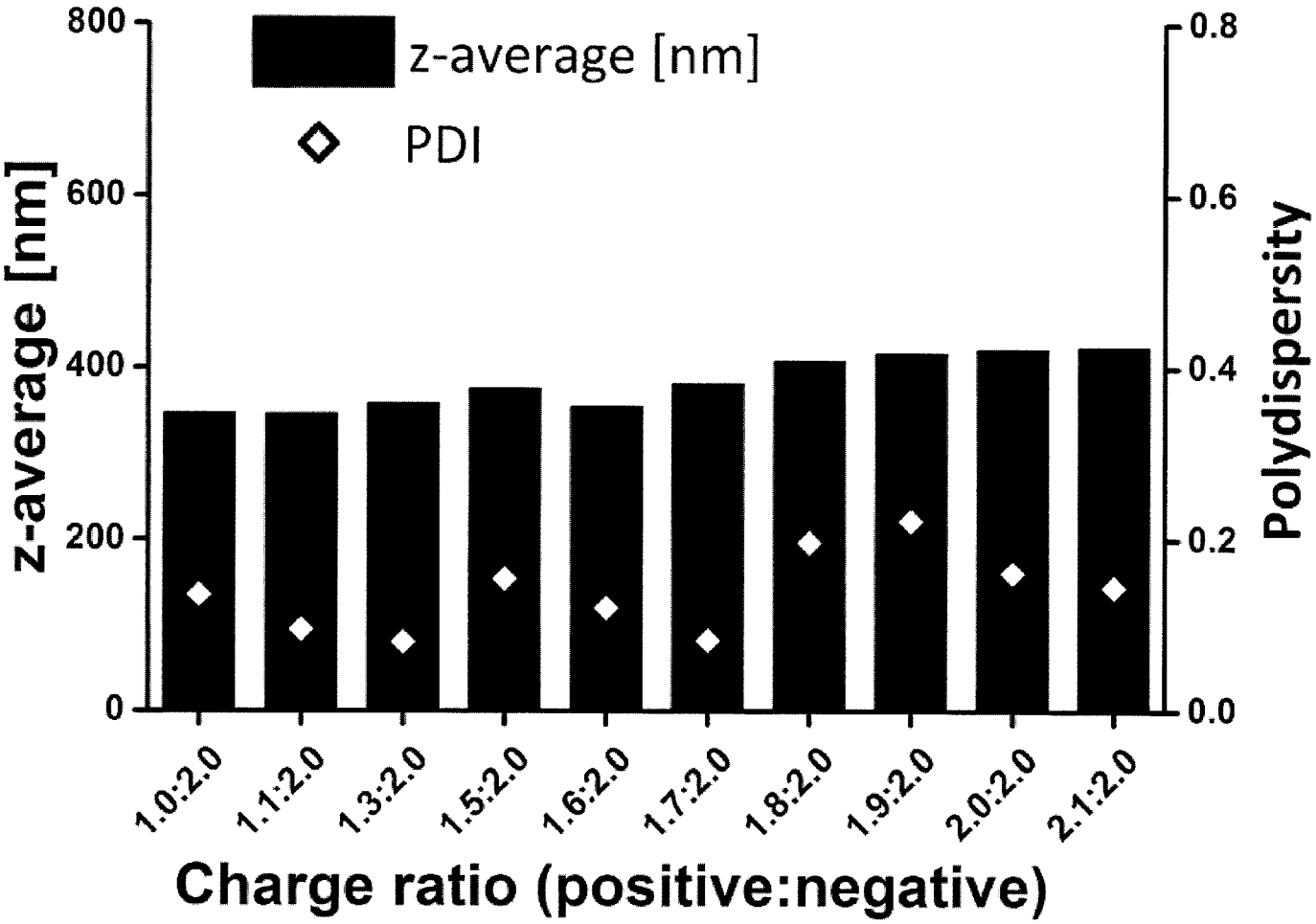

z-average [nm]
PDI
z-average [nm]
Polydispersity
800
600
400
200
0
0.8
0.6
0.4
0.2
0.0
1.0:2.0
1.1:2.0
1.3:2.0
1.5:2.0
1.6:2.0
1.7:2.0
1.8:2.0
1.9:2.0
2.0:2.0
2.1:2.0
Charge ratio (positive:negative)

Figure 17

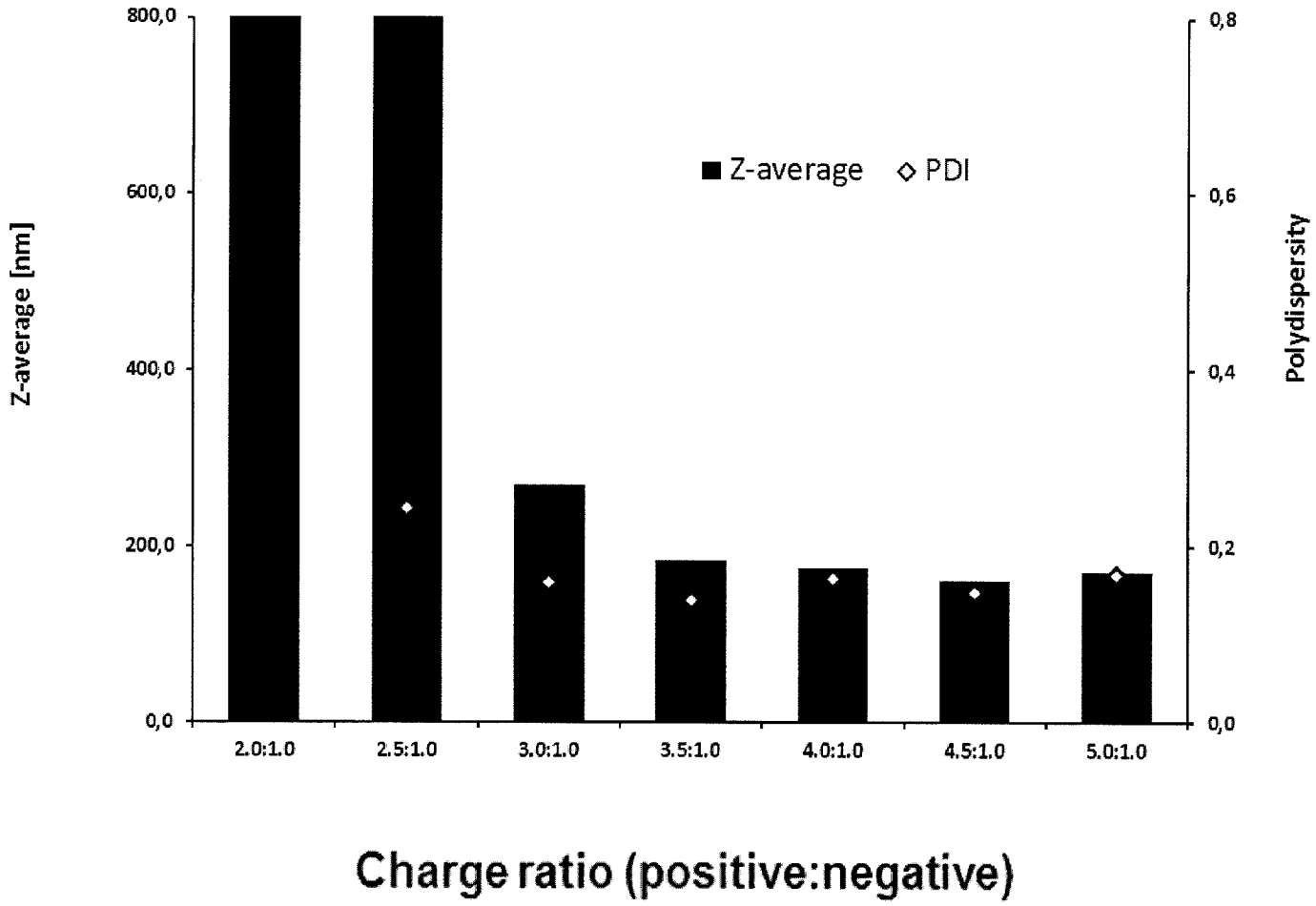

800,0
600,0
400,0
200,0
0,0
Z-average [nm]
0,8
0,6
0,4
0,2
0,0
Polydispersity
Z-average
PDI
2.0:1.0
2.5:1.0
3.0:1.0
3.5:1.0
4.0:1.0
4.5:1.0
5.0:1.0
Charge ratio (positive:negative)

Figure 18

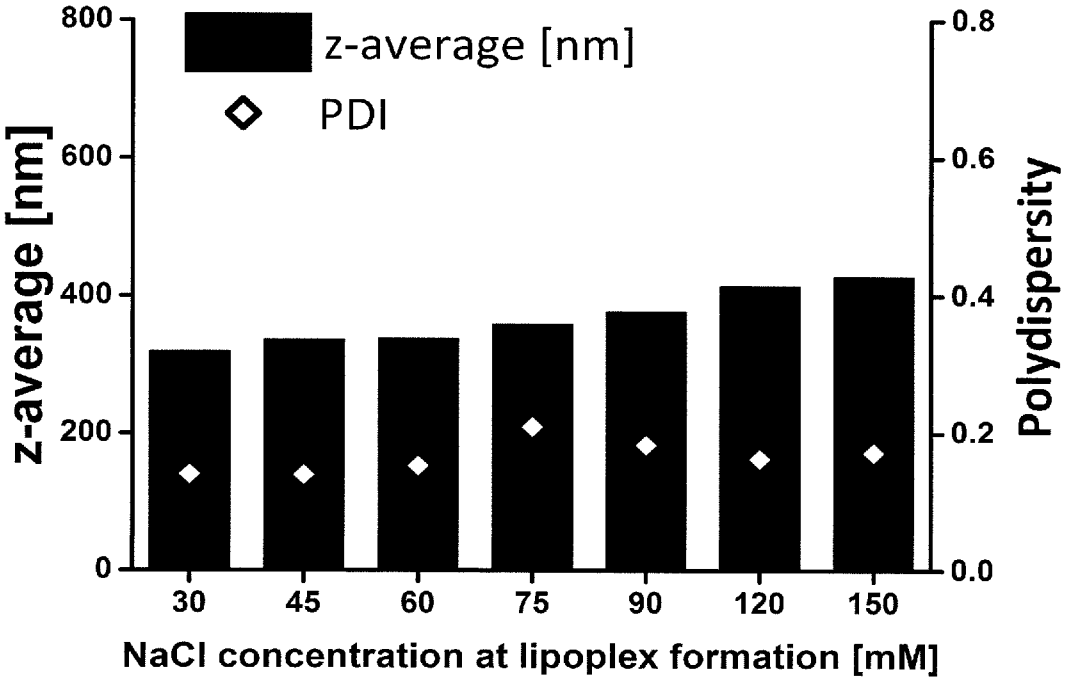

z-average [nm]
PDI
z-average [nm]
Polydispersity
800
600
400
200
0
0.8
0.6
0.4
0.2
0.0
30
45
60
75
90
120
150
NaCl concentration at lipoplex formation [mM]

Figure 19

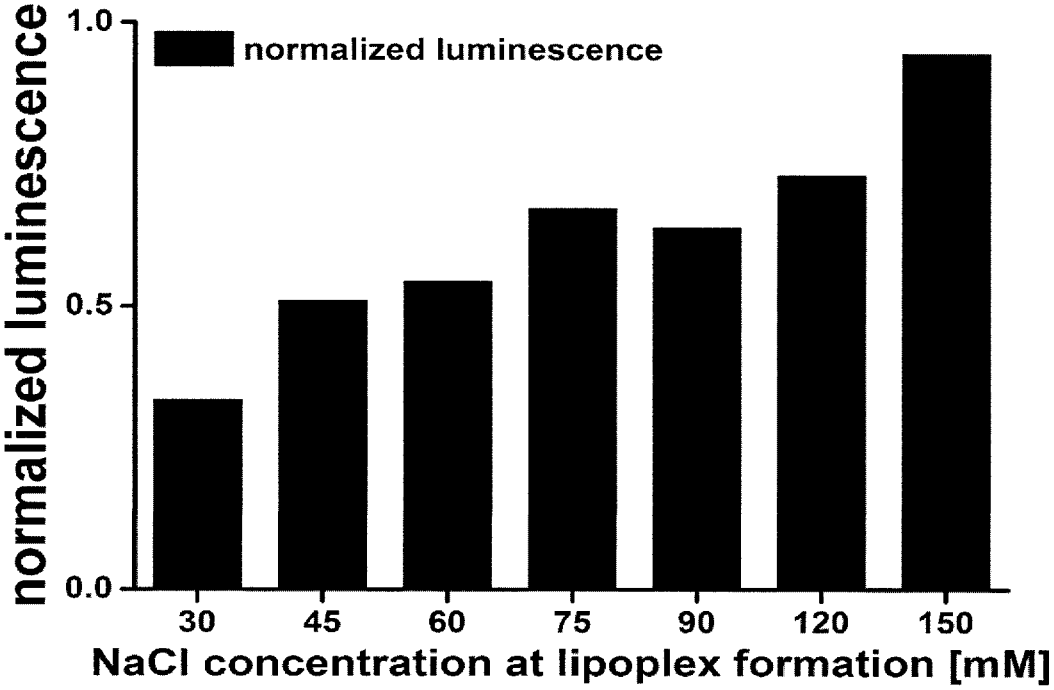

normalized luminescence
1.0
0.5
0.0
30
45
60
75
90
120
150
NaCl concentration at lipoplex formation [mM]

Figure 20

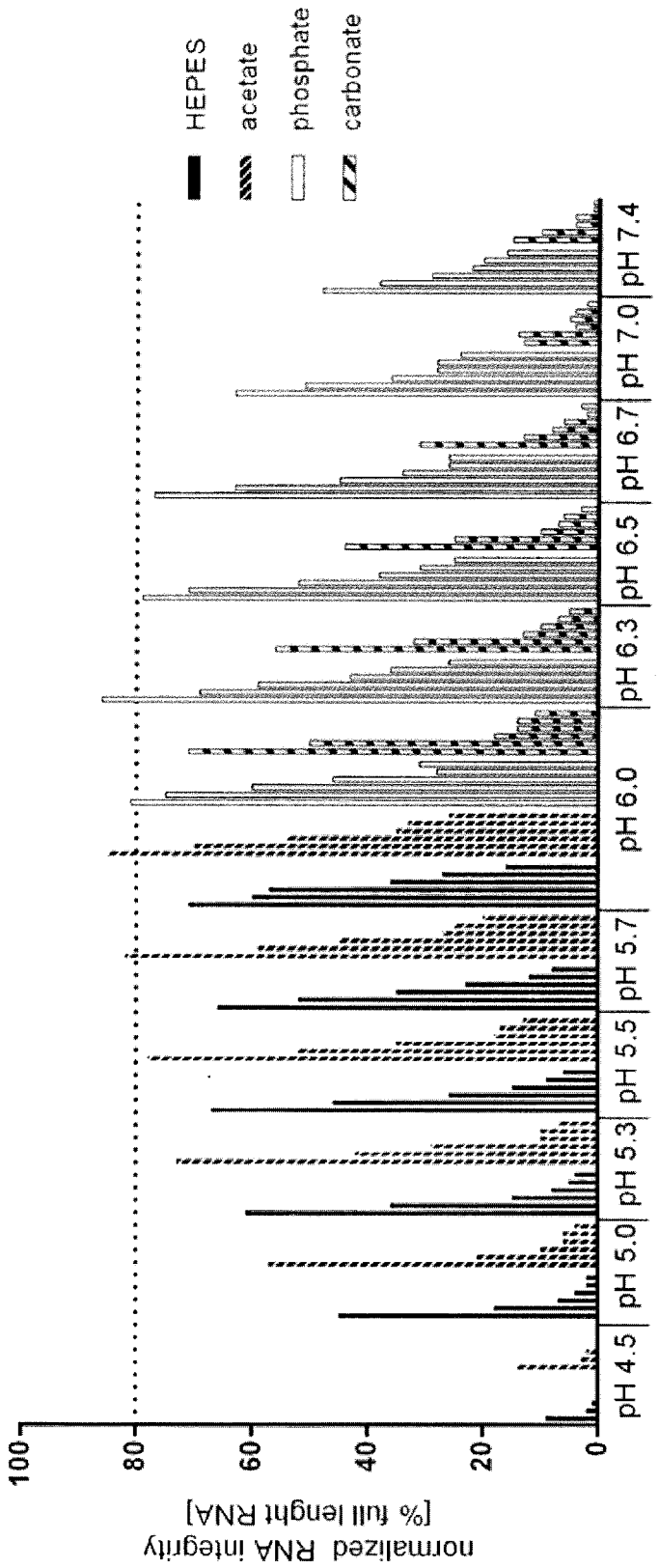

HEPES
acetate
phosphate
carbonate
normalized RNA integrity
[% full length RNA]
100
80
60
40
20
0
pH 4.5
pH 5.0
pH 5.3
pH 5.5
pH 5.7
pH 6.0
pH 6.3
pH 6.5
pH 6.7
pH 7.0
pH 7.4

Figure 21

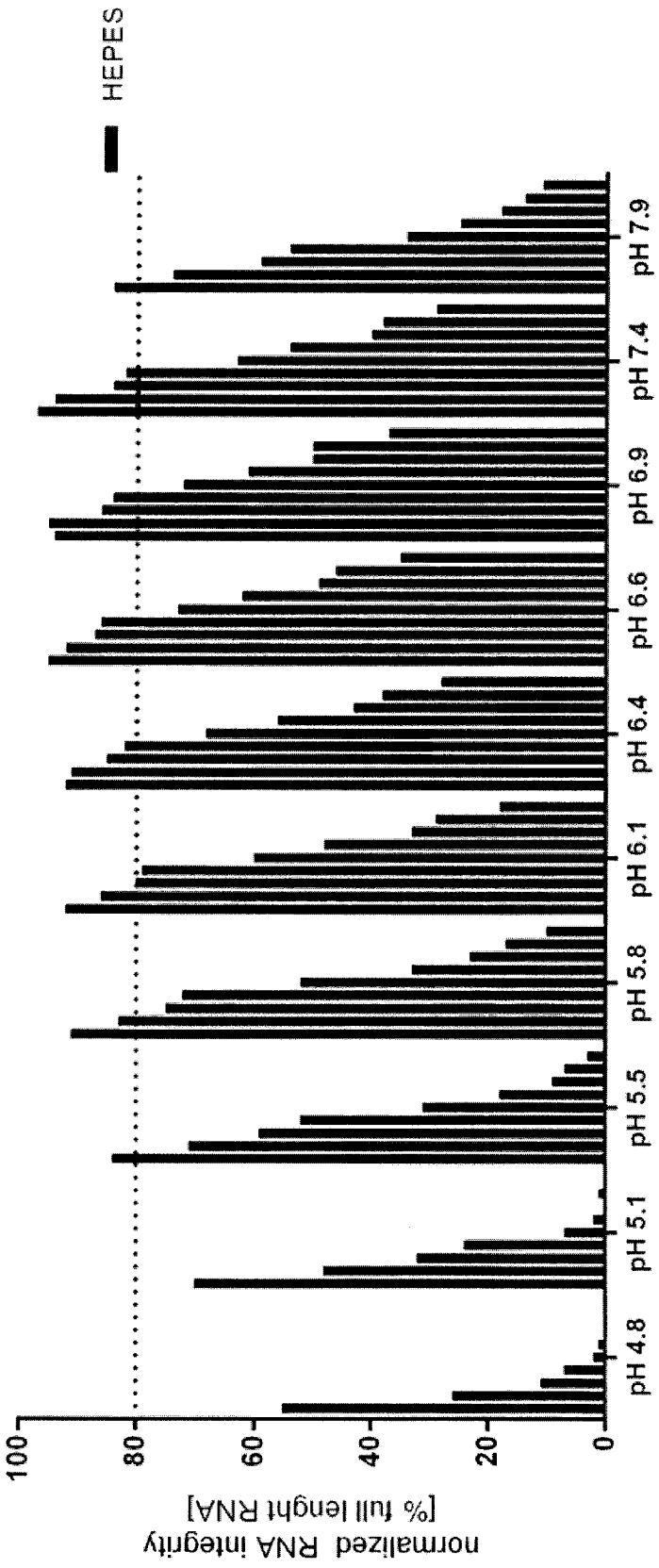

HEPES
normalized RNA integrity
[% full length RNA]
100
80
60
40
20
0
pH 4.8
pH 5.1
pH 5.5
pH 5.8
pH 6.1
pH 6.4
pH 6.6
pH 6.9
pH 7.4
pH 7.9

Figure 22

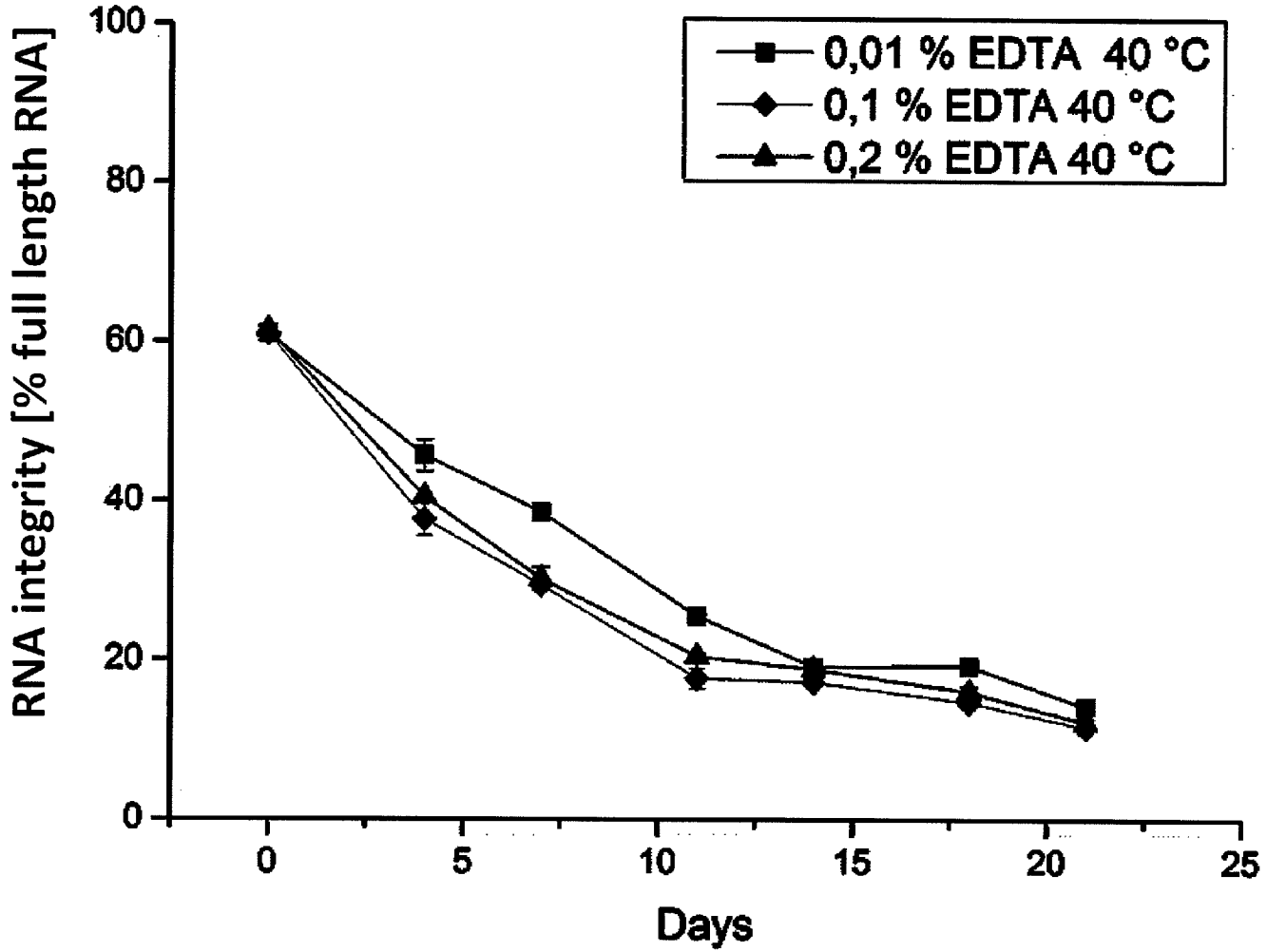

0,01 % EDTA 40 °C
0,1 % EDTA 40 °C
0,2 % EDTA 40 °C
RNA integrity [% full length RNA]
100
80
60
40
20
0
0
5
10
15
20
25
Days

Figure 23

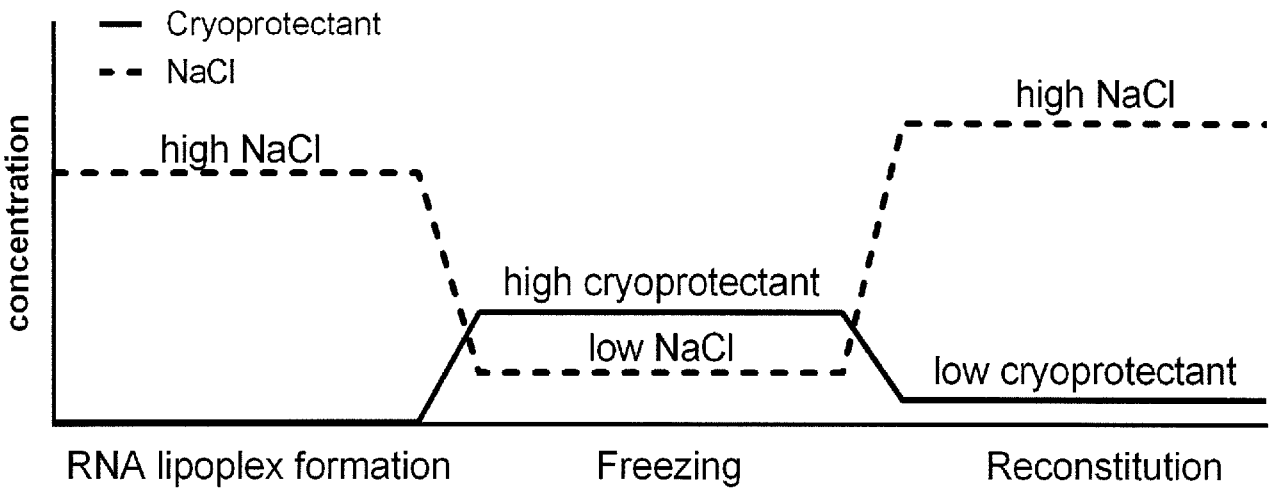

Cryoprotectant
NaCl
concentration
high NaCl
high NaCl
high cryoprotectant
low NaCl
low cryoprotectant
RNA lipoplex formation
Freezing
Reconstitution

Figure 24

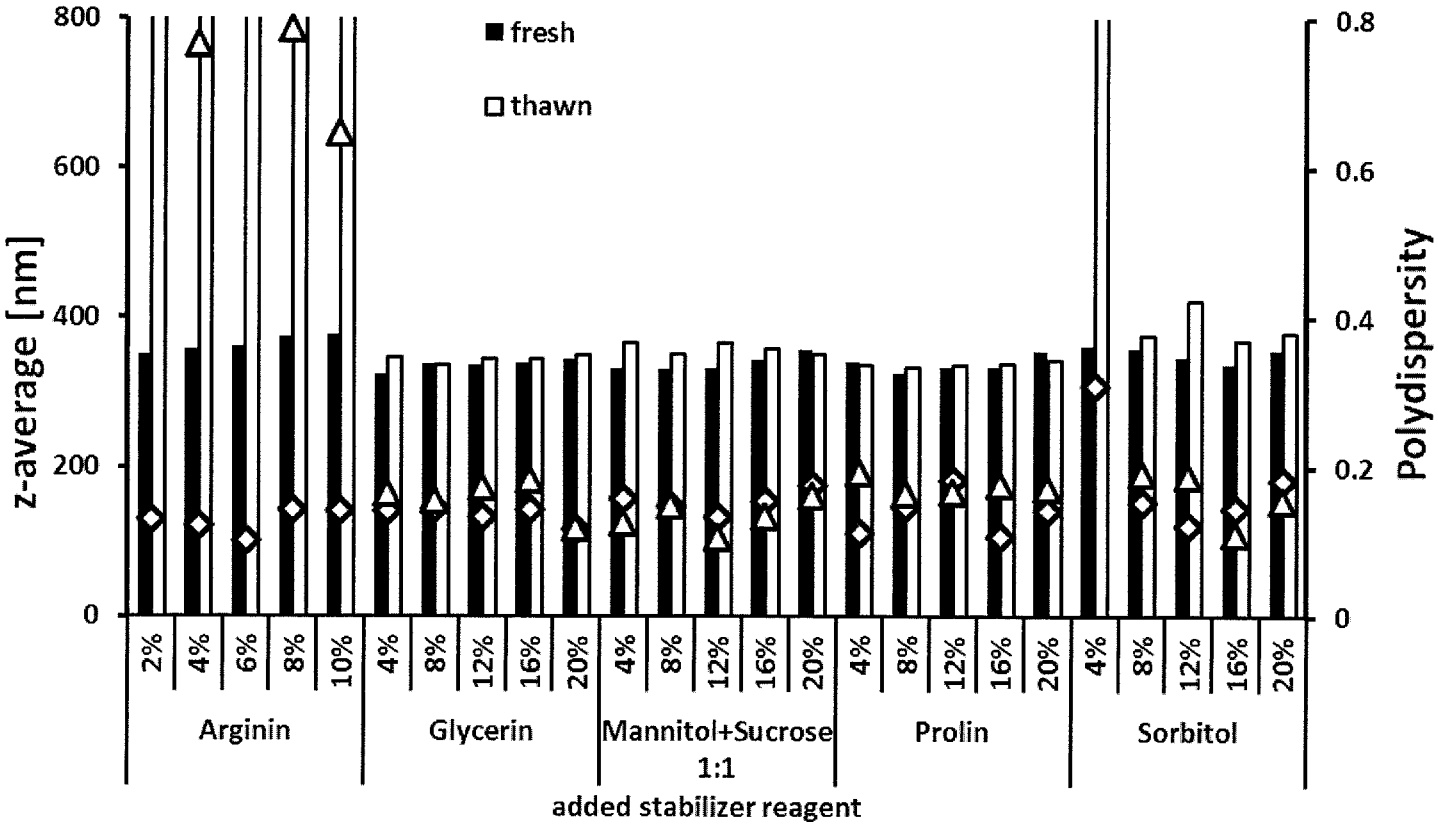

800
600
400
200
0
z-average [nm]
fresh
thawn
0.8
0.6
0.4
0.2
0
Polydispersity
2%
4%
6%
8%
10%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
Arginin
Glycerin
Mannitol+Sucrose 1:1
Prolin
Sorbitol
added stabilizer reagent

Figure 25

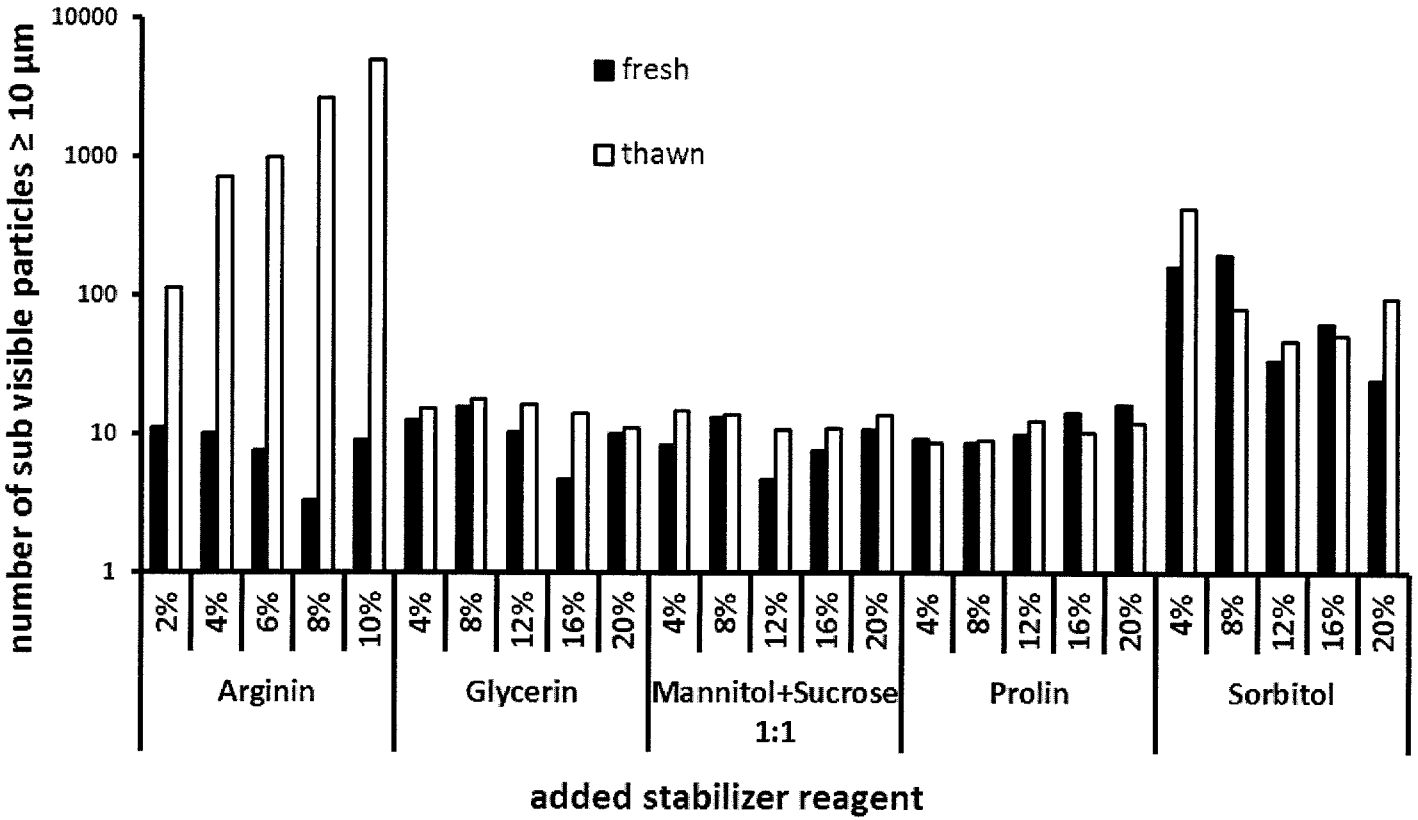

number of sub visible particles ≥ 10 µm
10000
1000
100
10
1
fresh
thawn
2%
4%
6%
8%
10%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
4%
8%
12%
16%
20%
Arginin
Glycerin
Mannitol+Sucrose 1:1
Prolin
Sorbitol
added stabilizer reagent

Figure 26

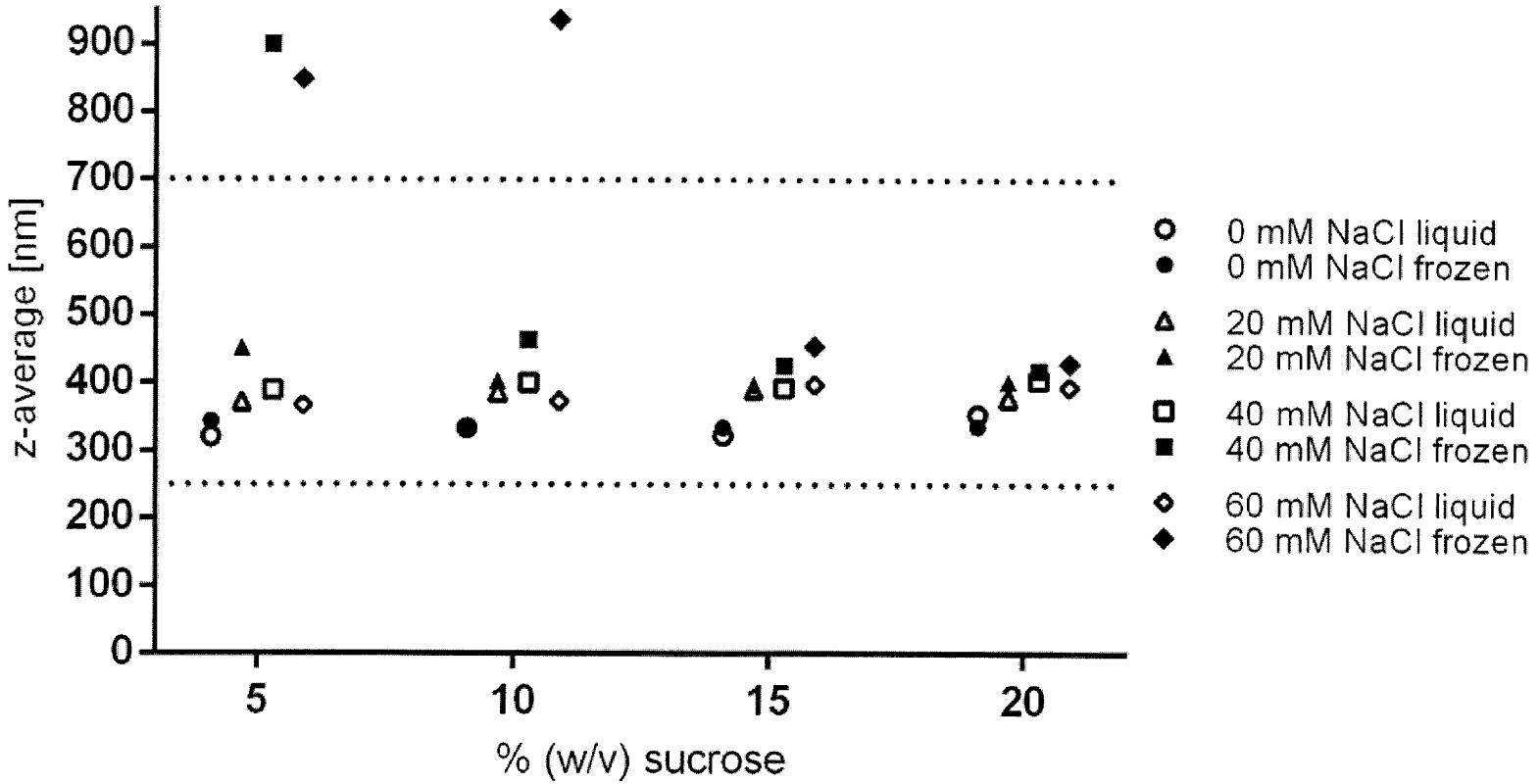

z-average [nm]
900
800
700
600
500
400
300
200
100
0
5
10
15
20
% (w/v) sucrose
0 mM NaCl liquid
0 mM NaCl frozen
20 mM NaCl liquid
20 mM NaCl frozen
40 mM NaCl liquid
40 mM NaCl frozen
60 mM NaCl liquid
60 mM NaCl frozen

Figure 27

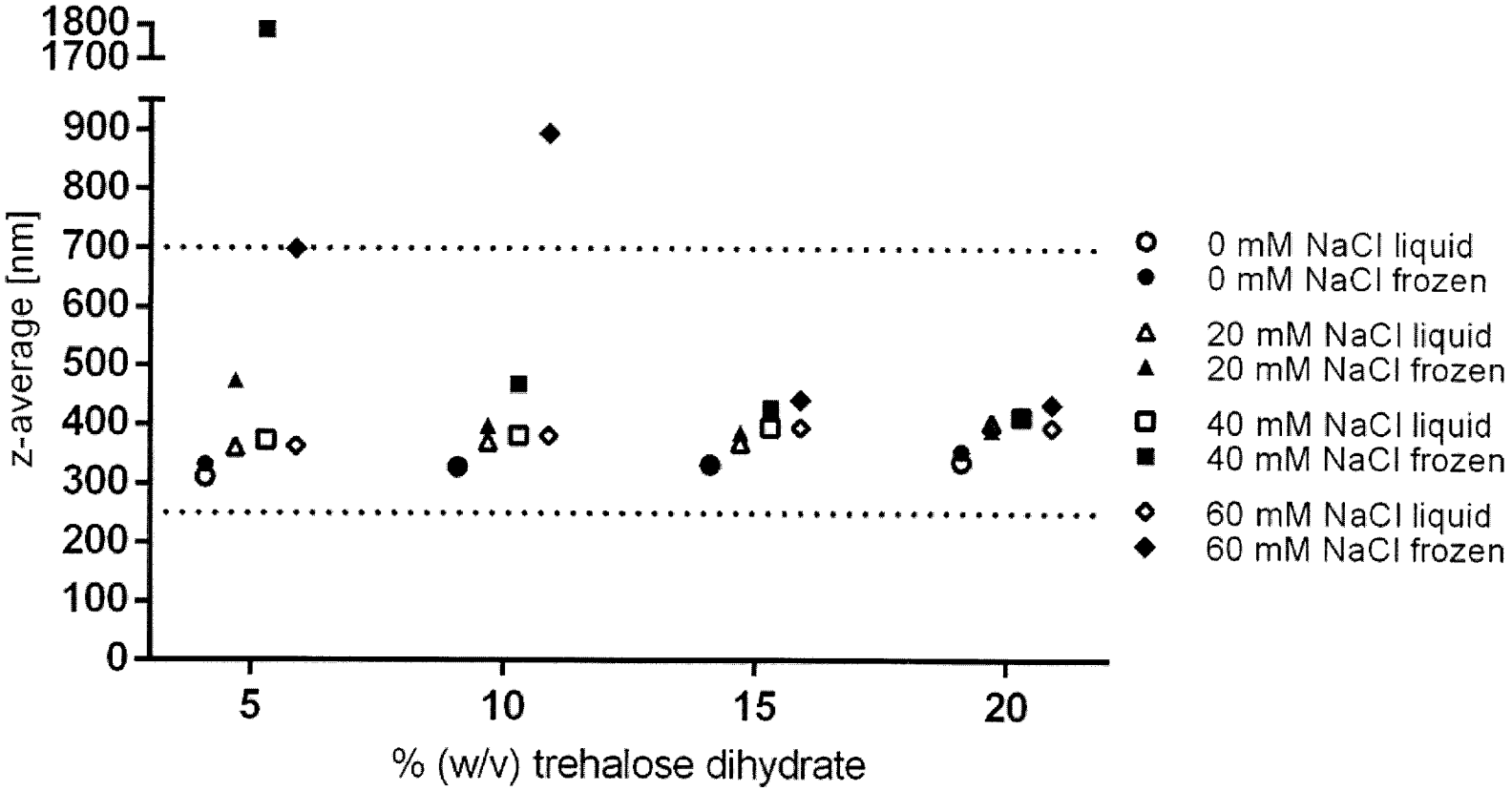

1800
1700
900
800
700
600
500
400
300
200
100
0
z-average [nm]
5
10
15
20
% (w/v) trehalose dihydrate
0 mM NaCl liquid
0 mM NaCl frozen
20 mM NaCl liquid
20 mM NaCl frozen
40 mM NaCl liquid
40 mM NaCl frozen
60 mM NaCl liquid
60 mM NaCl frozen

Figure 28

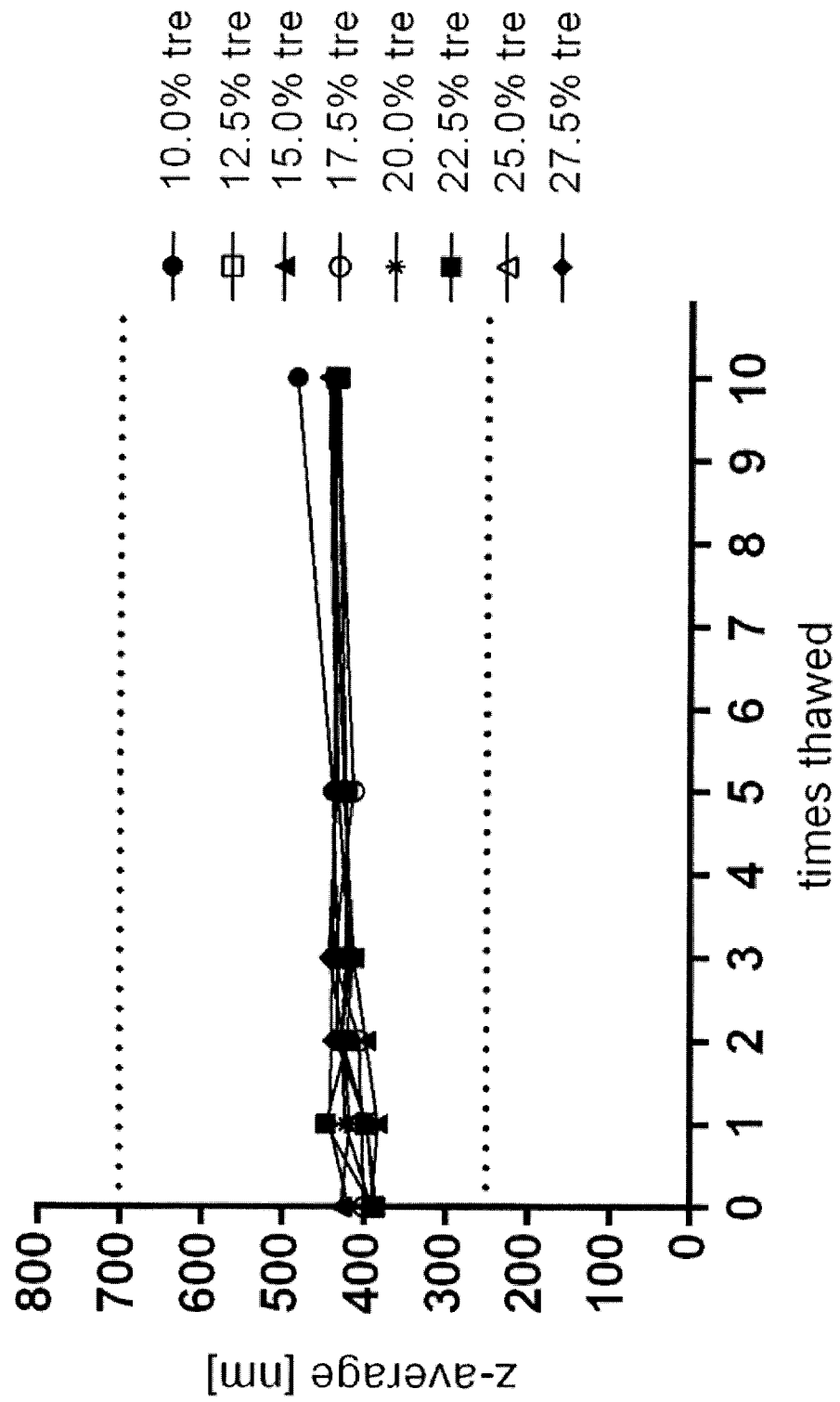

z-average [nm]
800
700
600
500
400
300
200
100
0
0 1 2 3 4 5 6 7 8 9 10
times thawed
10.0% tre
12.5% tre
15.0% tre
17.5% tre
20.0% tre
22.5% tre
25.0% tre
27.5% tre

Figure 29

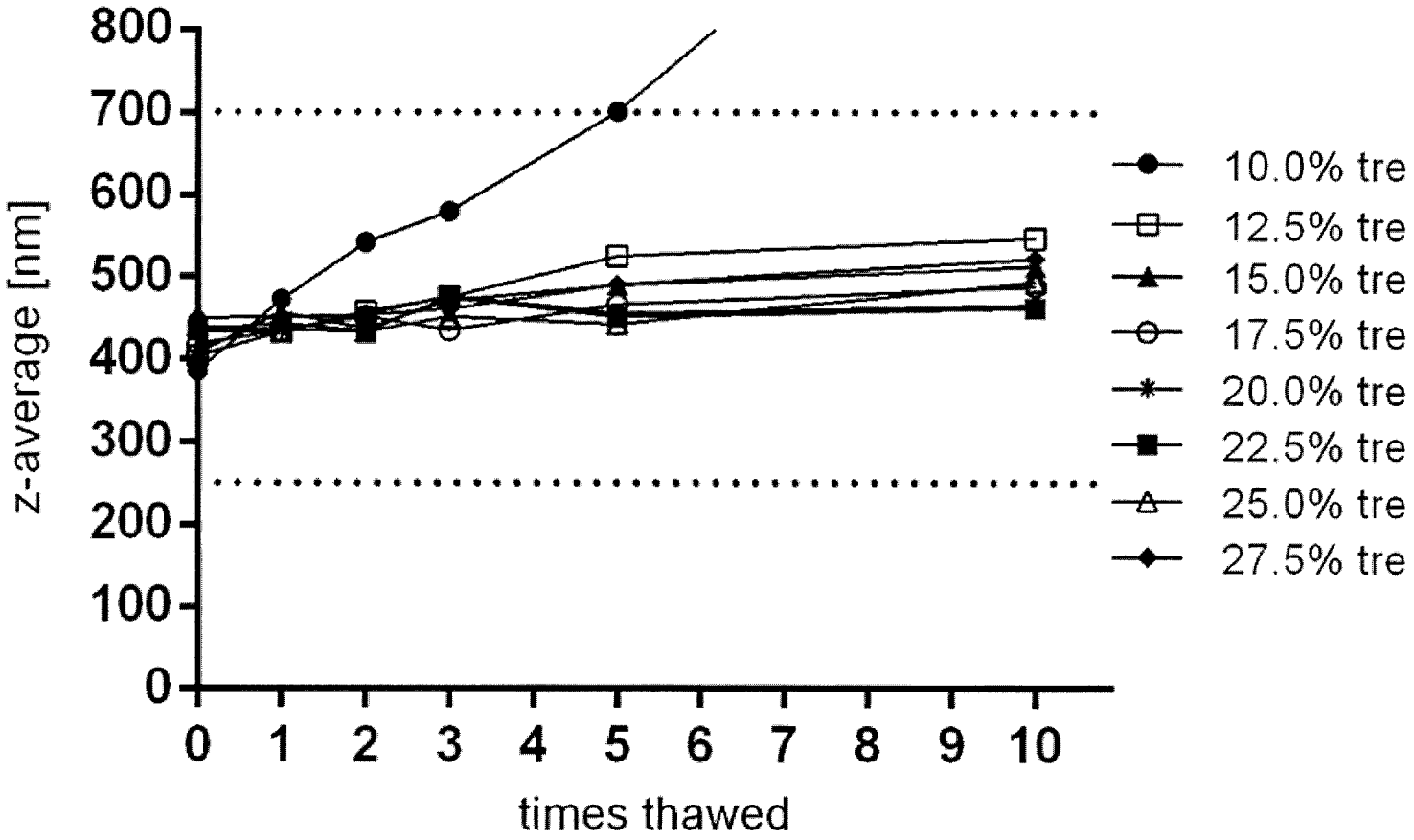

800
700
600
500
400
300
200
100
0
z-average [nm]
0 1 2 3 4 5 6 7 8 9 10
times thawed
10.0% tre
12.5% tre
15.0% tre
17.5% tre
20.0% tre
22.5% tre
25.0% tre
27.5% tre

Figure 30

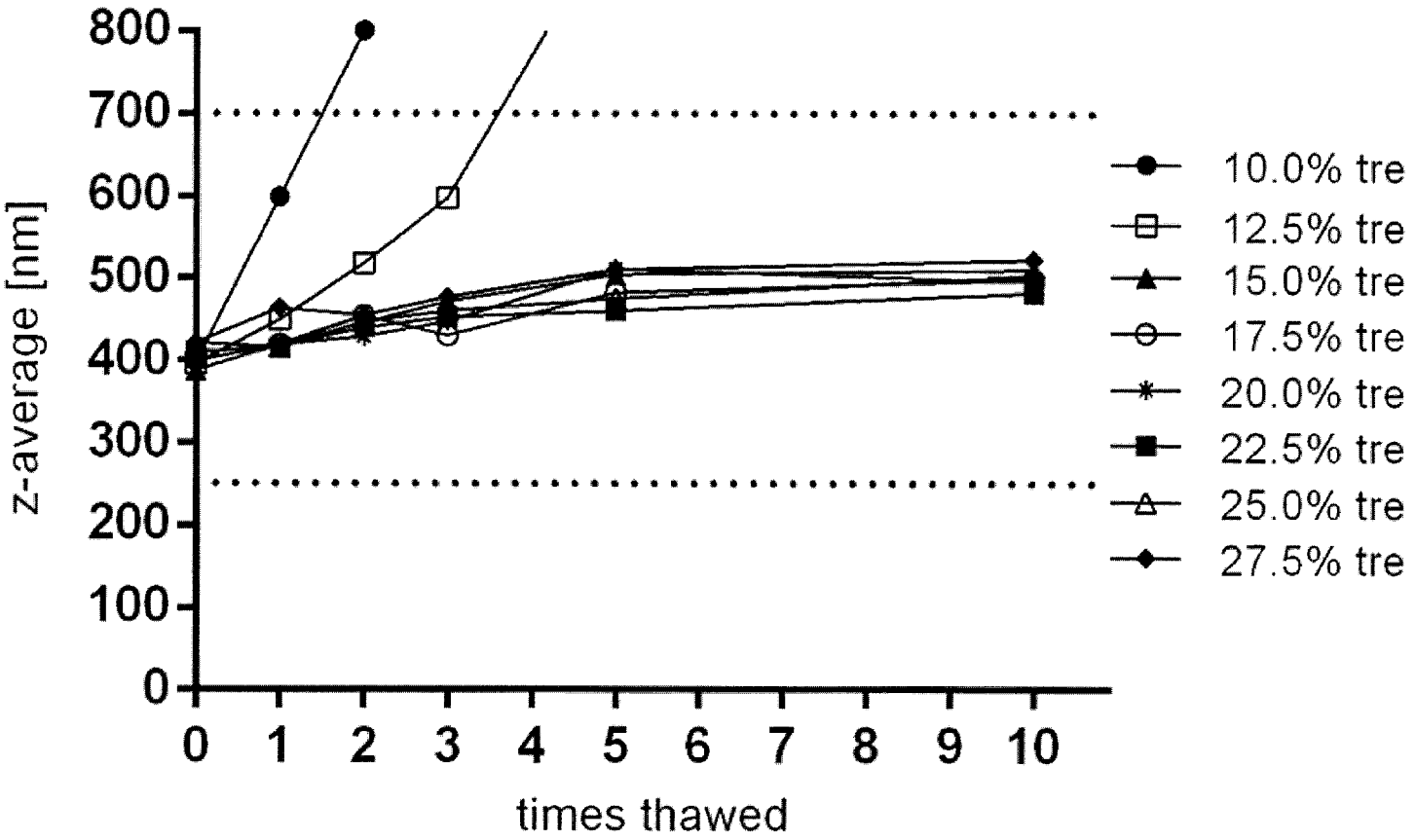

800
700
600
500
400
300
200
100
0
z-average [nm]
0 1 2 3 4 5 6 7 8 9 10
times thawed
10.0% tre
12.5% tre
15.0% tre
17.5% tre
20.0% tre
22.5% tre
25.0% tre
27.5% tre

Figure 31

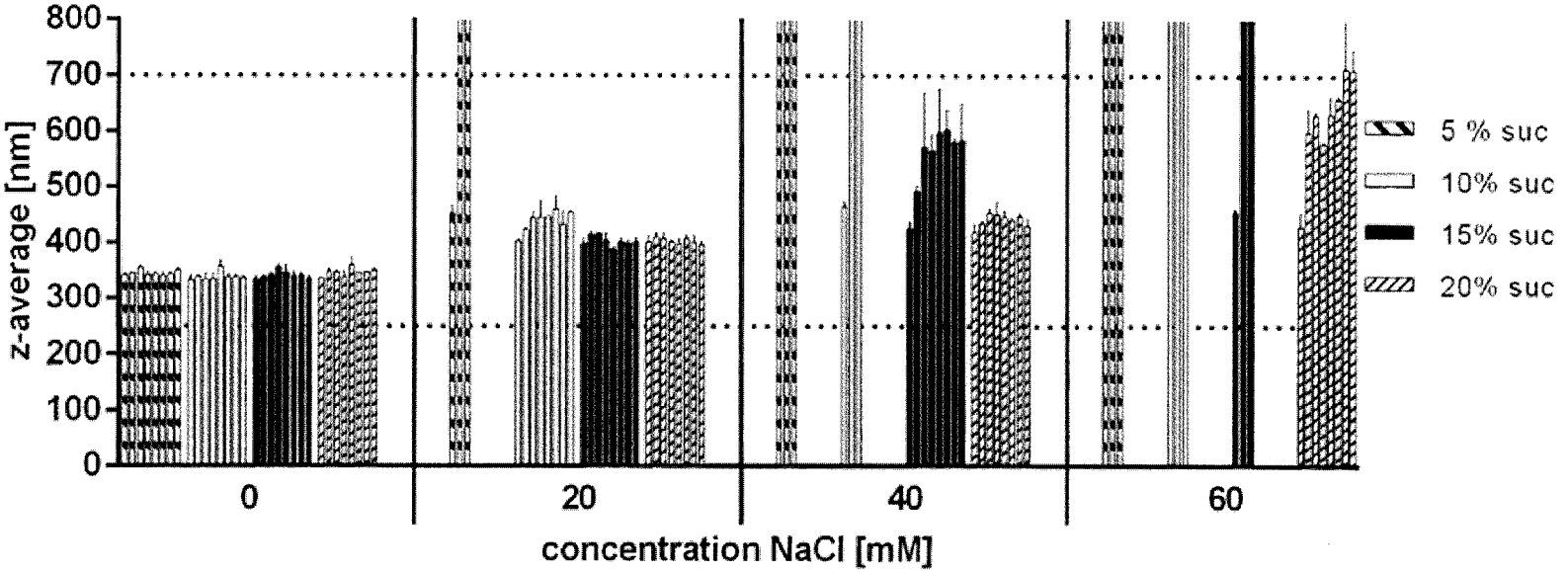

800
700
600
500
400
300
200
100
0
z-average [nm]
0
20
40
60
concentration NaCl [mM]
5 % suc
10% suc
15% suc
20% suc

Figure 32

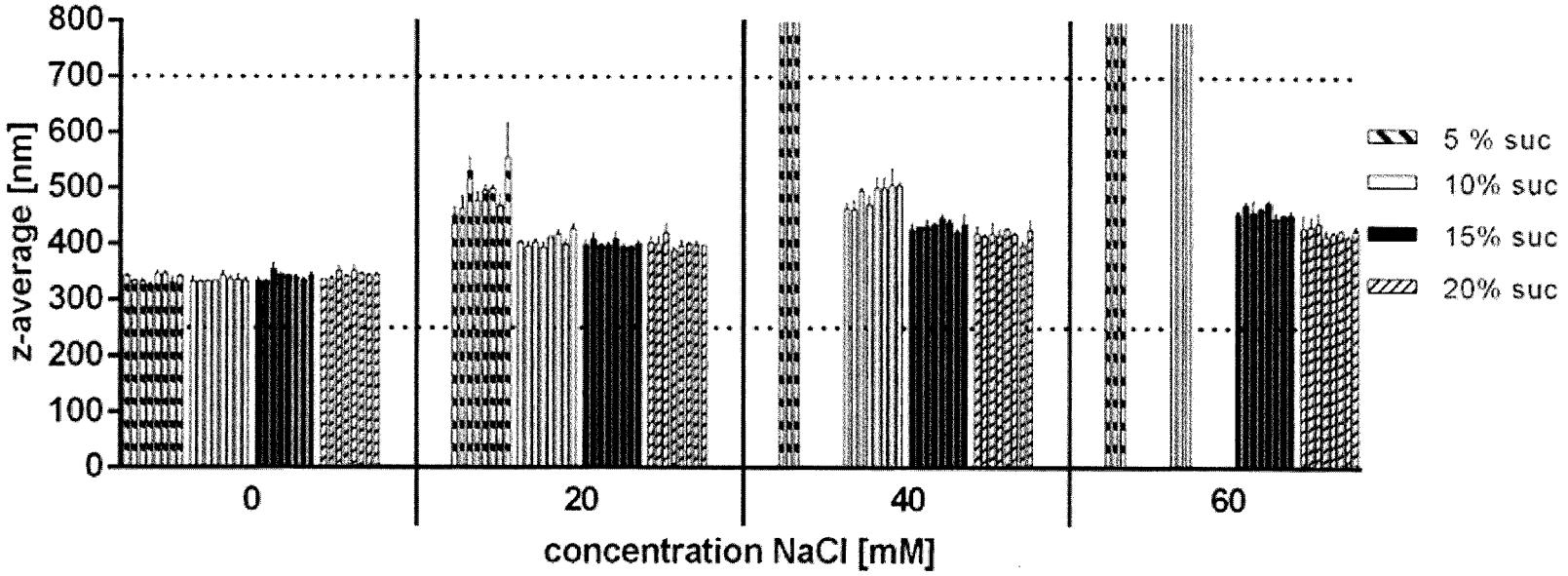

800
700
600
500
400
300
200
100
0
z-average [nm]
0
20
40
60
concentration NaCl [mM]
5 % suc
10% suc
15% suc
20% suc

Figure 33

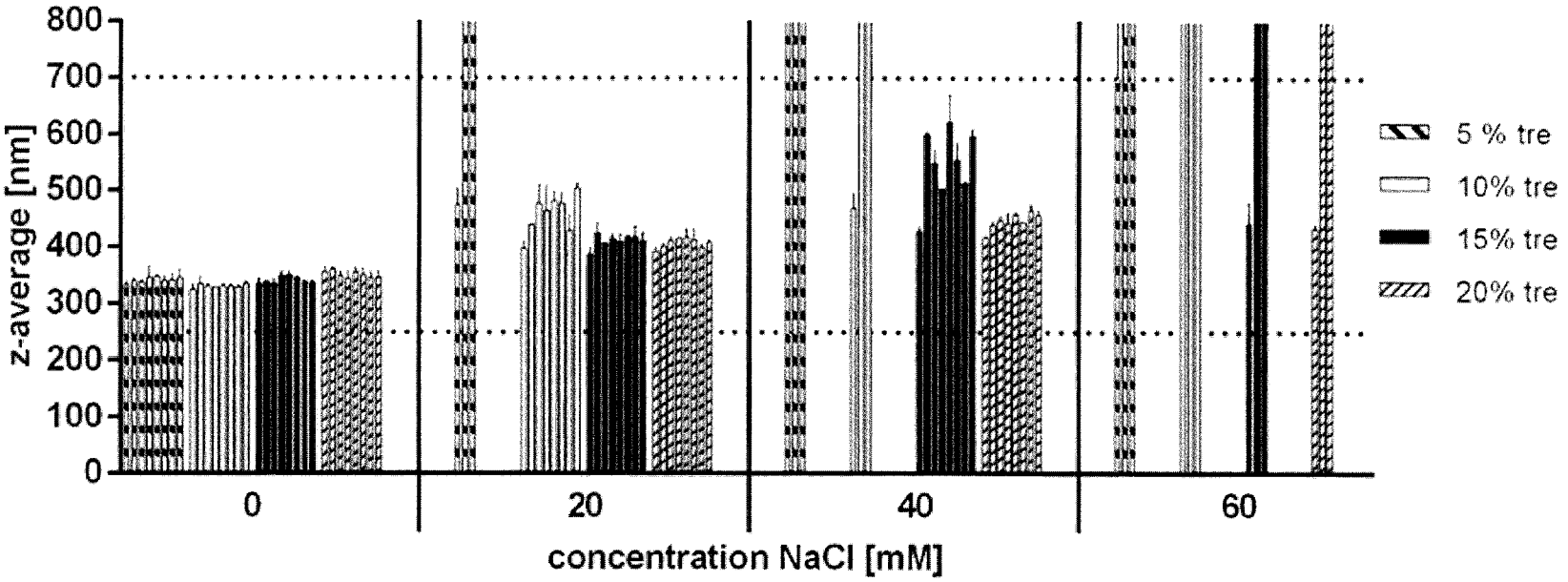

800
700
600
500
400
300
200
100
0
z-average [nm]
0
20
40
60
concentration NaCl [mM]
5 % tre
10% tre
15% tre
20% tre

Figure 34

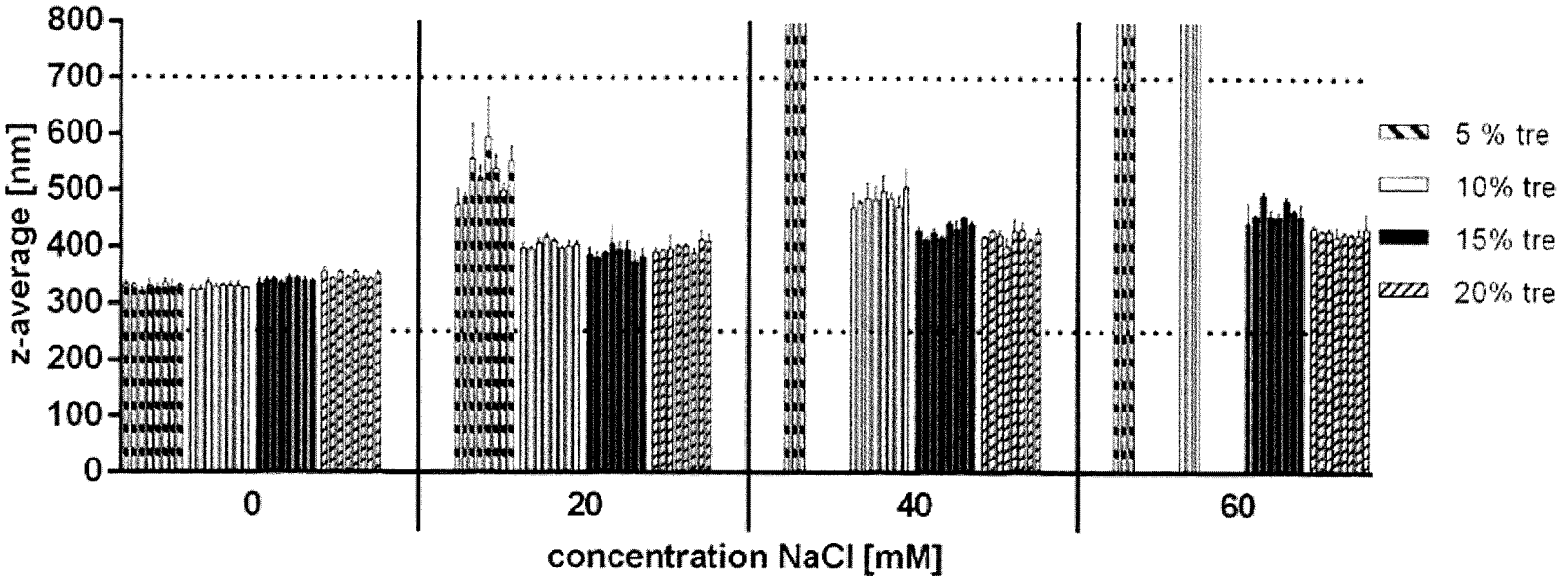

800
700
600
500
400
300
200
100
0
z-average [nm]
0
20
40
60
concentration NaCl [mM]
5 % tre
10% tre
15% tre
20% tre

Figure 35

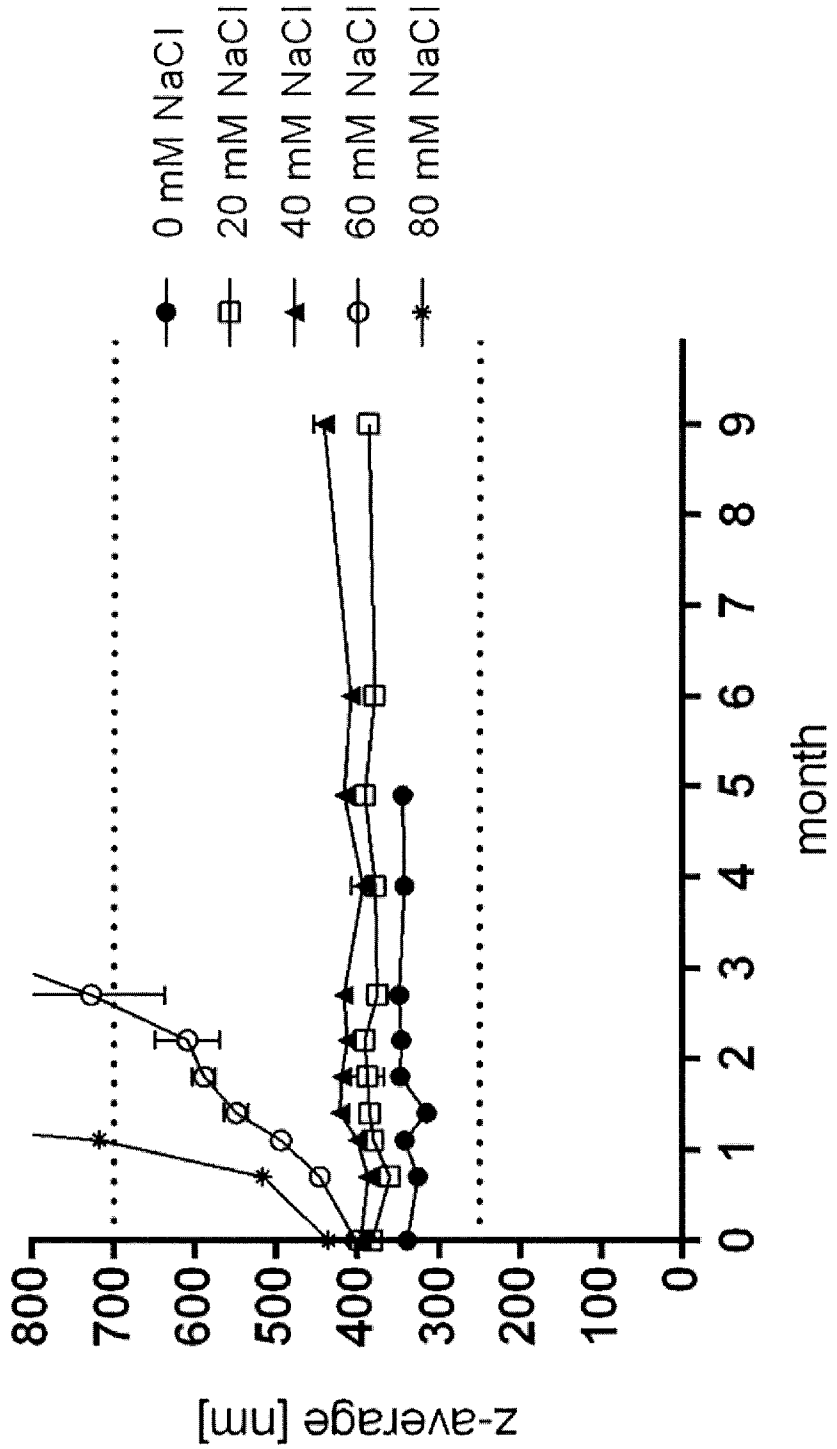

0 mM NaCl
20 mM NaCl
40 mM NaCl
60 mM NaCl
80 mM NaCl
z-average [nm]
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
8
9
month

Figure 36

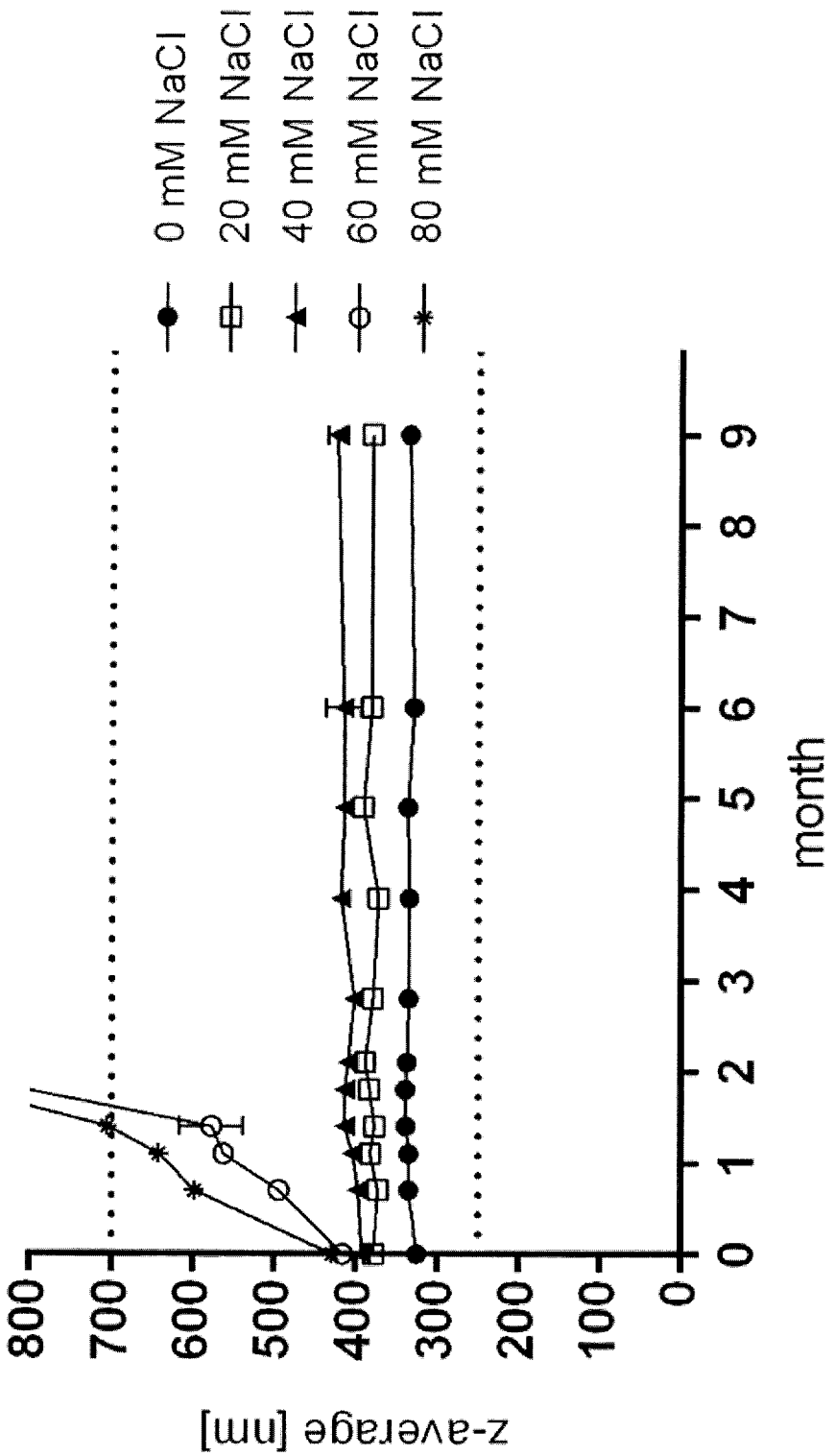

0 mM NaCl
20 mM NaCl
40 mM NaCl
60 mM NaCl
80 mM NaCl
z-average [nm]
800
700
600
500
400
300
200
100
0
0
1
2
3
4
5
6
7
8
9
month

Figure 37

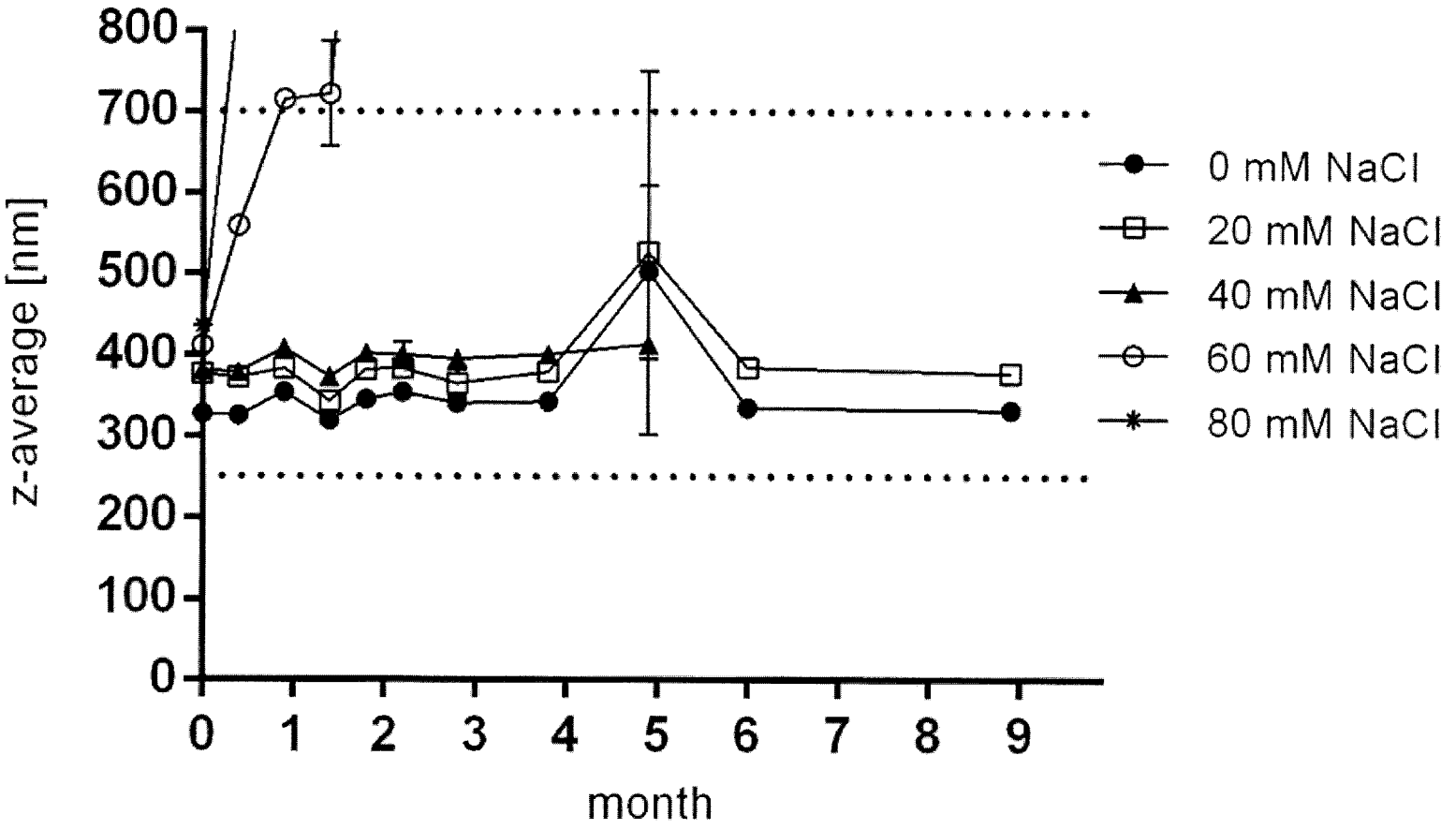

800
700
600
500
400
300
200
100
0
z-average [nm]
0
1
2
3
4
5
6
7
8
9
month
0 mM NaCl
20 mM NaCl
40 mM NaCl
60 mM NaCl
80 mM NaCl

Figure 38

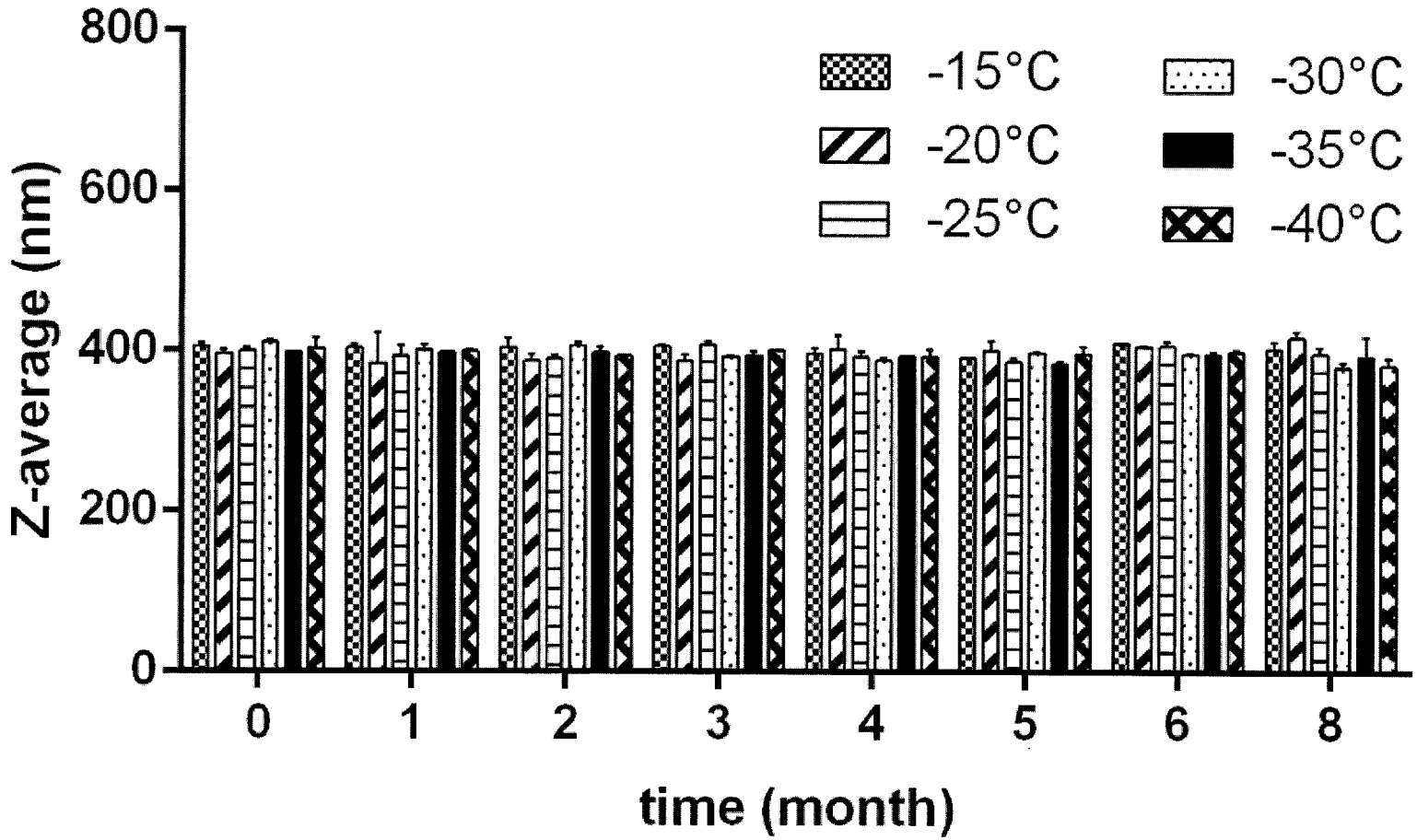

800
600
400
200
0
Z-average (nm)
-15°C
-20°C
-25°C
-30°C
-35°C
-40°C
0
1
2
3
4
5
6
8
time (month)

Figure 39

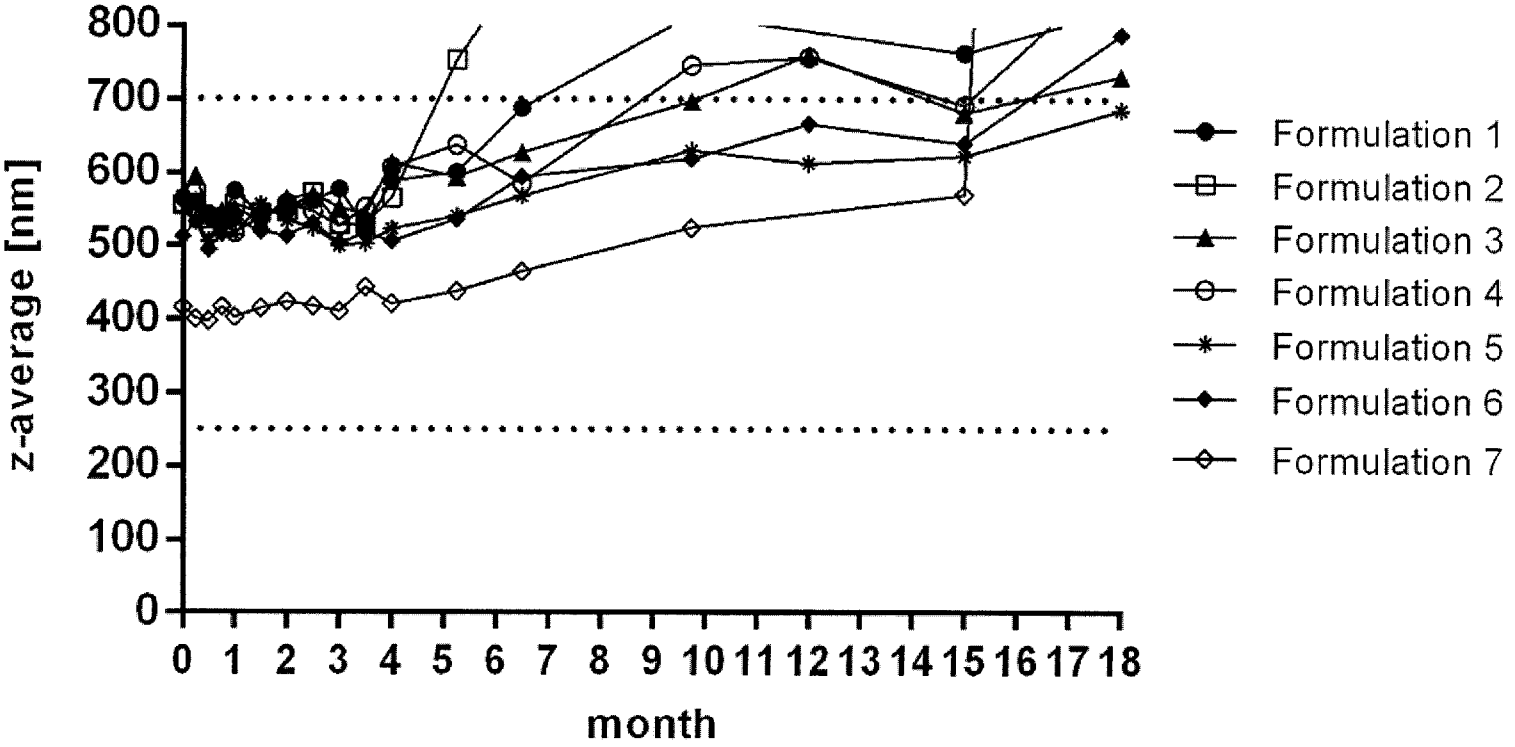

z-average [nm]
800
700
600
500
400
300
200
100
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
month
Formulation 1
Formulation 2
Formulation 3
Formulation 4
Formulation 5
Formulation 6
Formulation 7

Figure 40

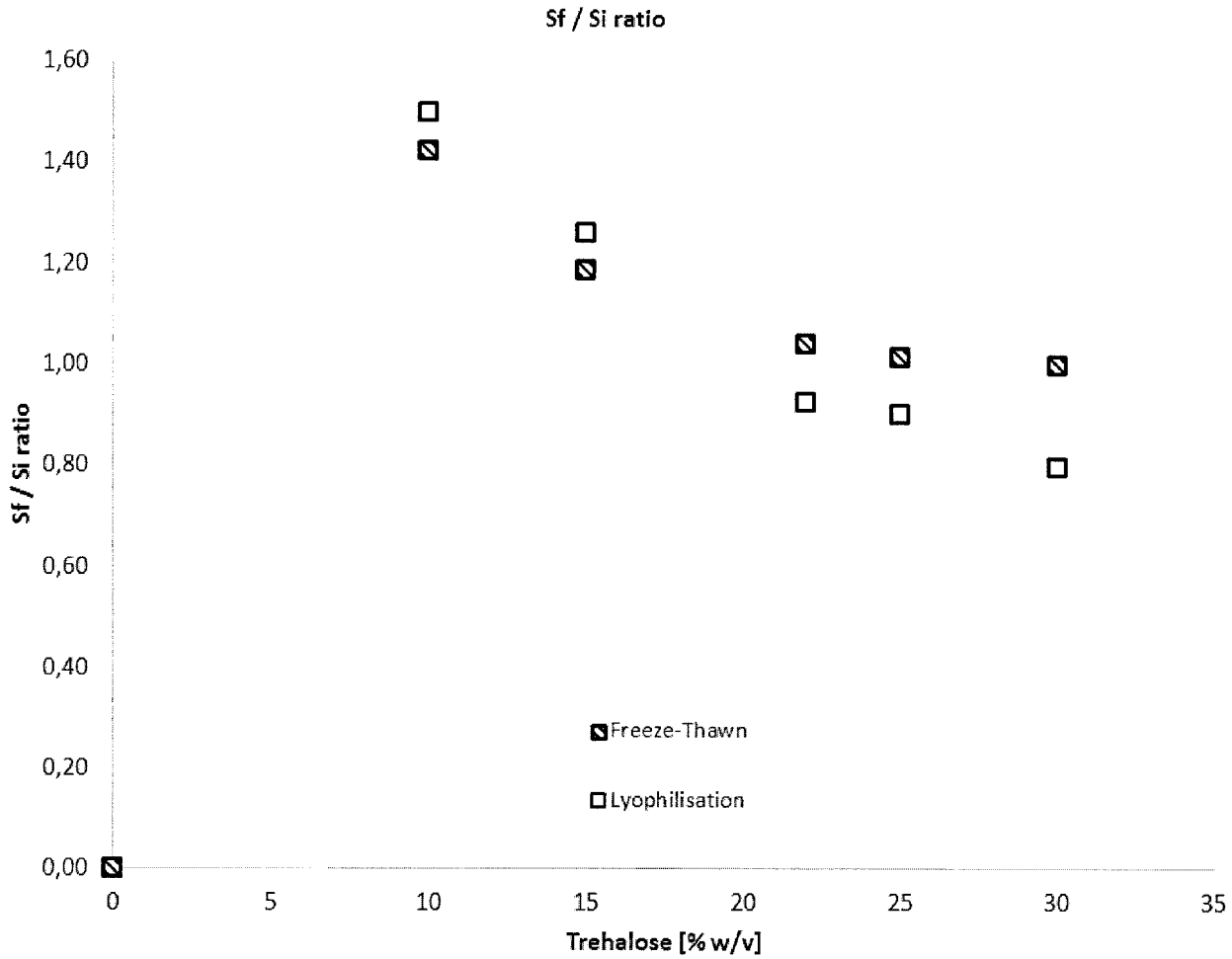

Sf / Si ratio
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
Sf / Si ratio
Freeze-Thawn
Lyophilisation
0
5
10
15
20
25
30
35
Trehalose [% w/v]

Figure 41

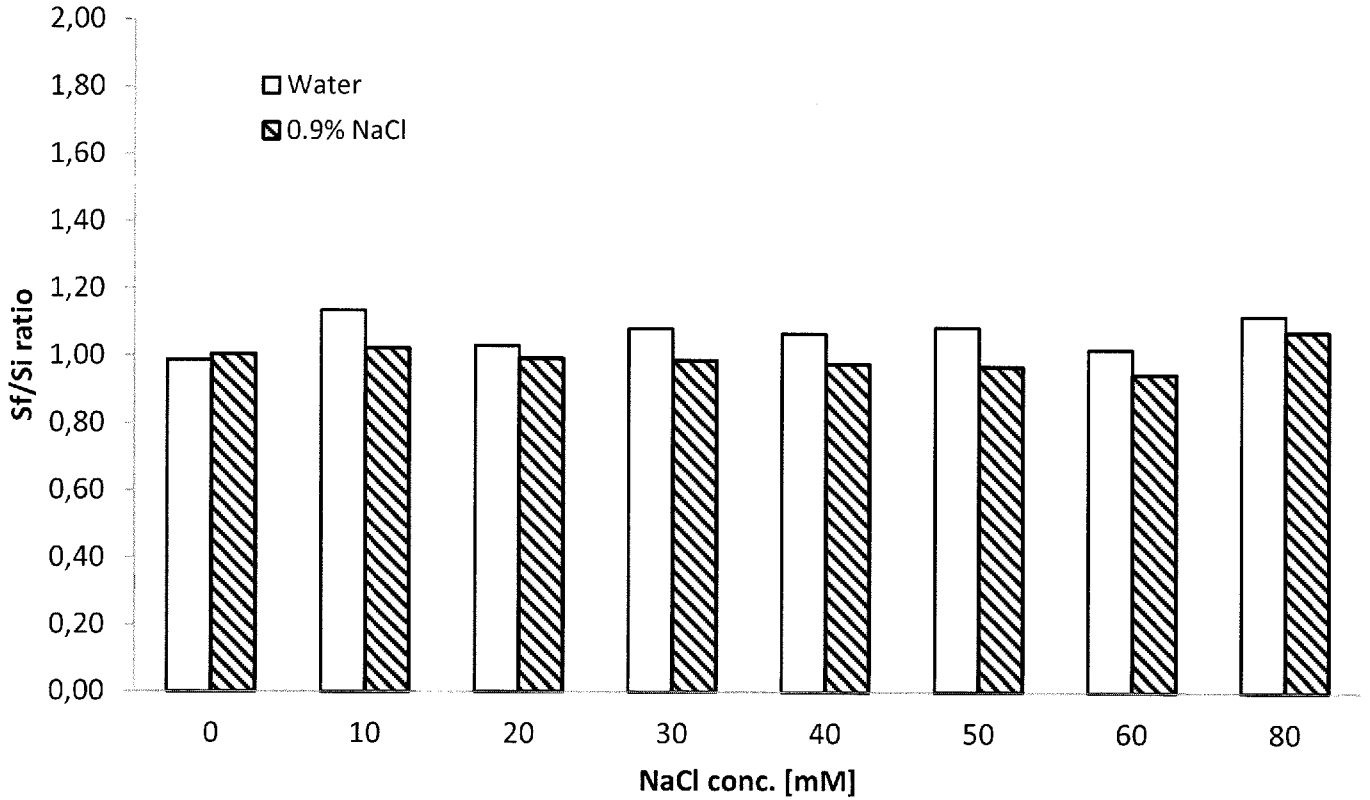

2,00
1,80
1,60
1,40
1,20
1,00
0,80
0,60
0,40
0,20
0,00
Sf/Si ratio
Water
0.9% NaCl
0
10
20
30
40
50
60
80
NaCl conc. [mM]

Figure 42

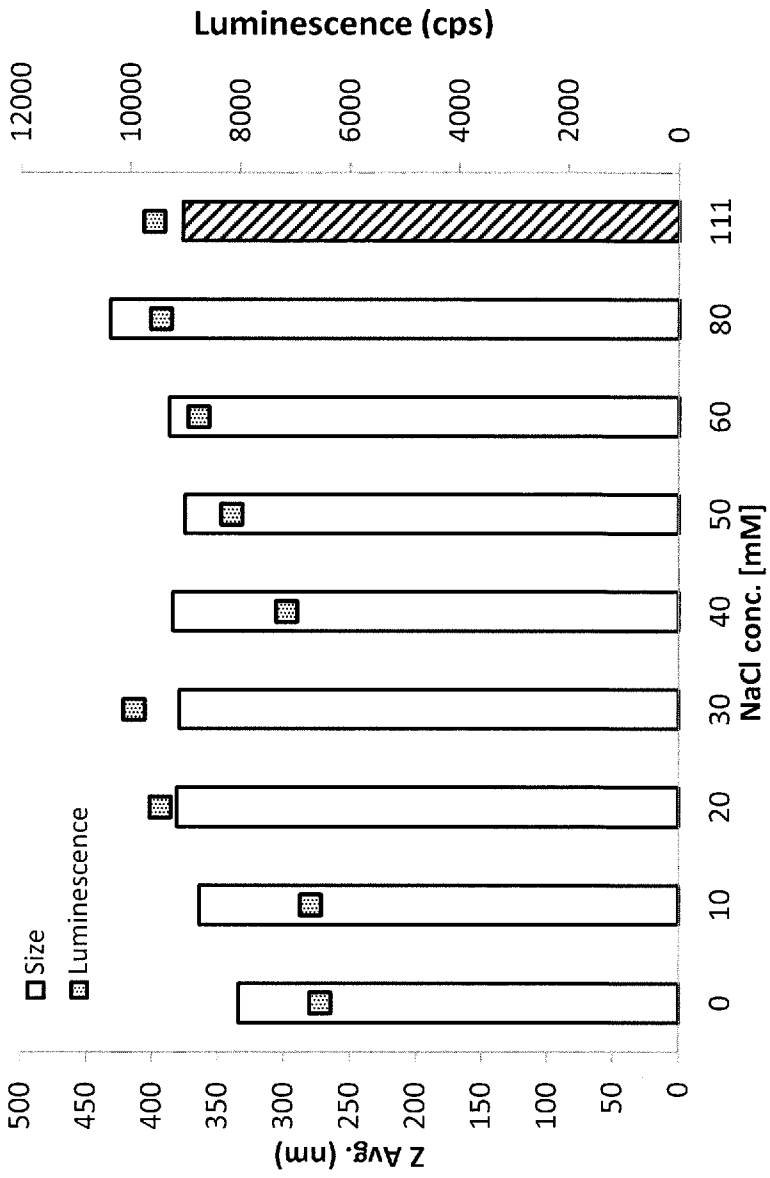

Luminescence (cps)
12000
10000
8000
6000
4000
2000
0
Size
Luminescence
Z Avg. (nm)
500
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
60
80
111
NaCl conc. [mM]

Figure 43

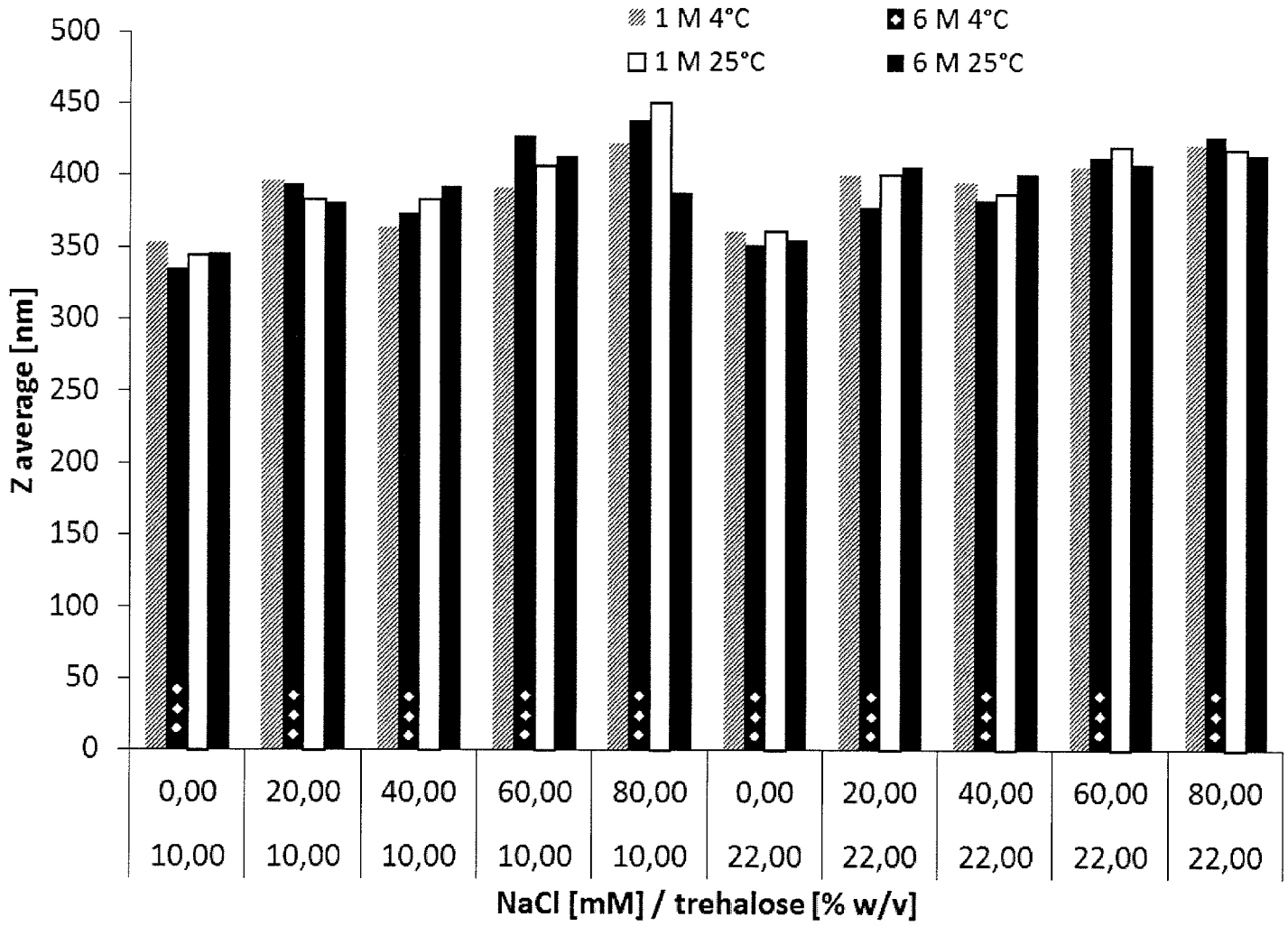

1 M 4°C
6 M 4°C
1 M 25°C
6 M 25°C
Z average [nm]
500
450
400
350
300
250
200
150
100
50
0
0,00 20,00 40,00 60,00 80,00 0,00 20,00 40,00 60,00 80,00
10,00 10,00 10,00 10,00 10,00 22,00 22,00 22,00 22,00 22,00
NaCl [mM] / trehalose [% w/v]

Figure 44

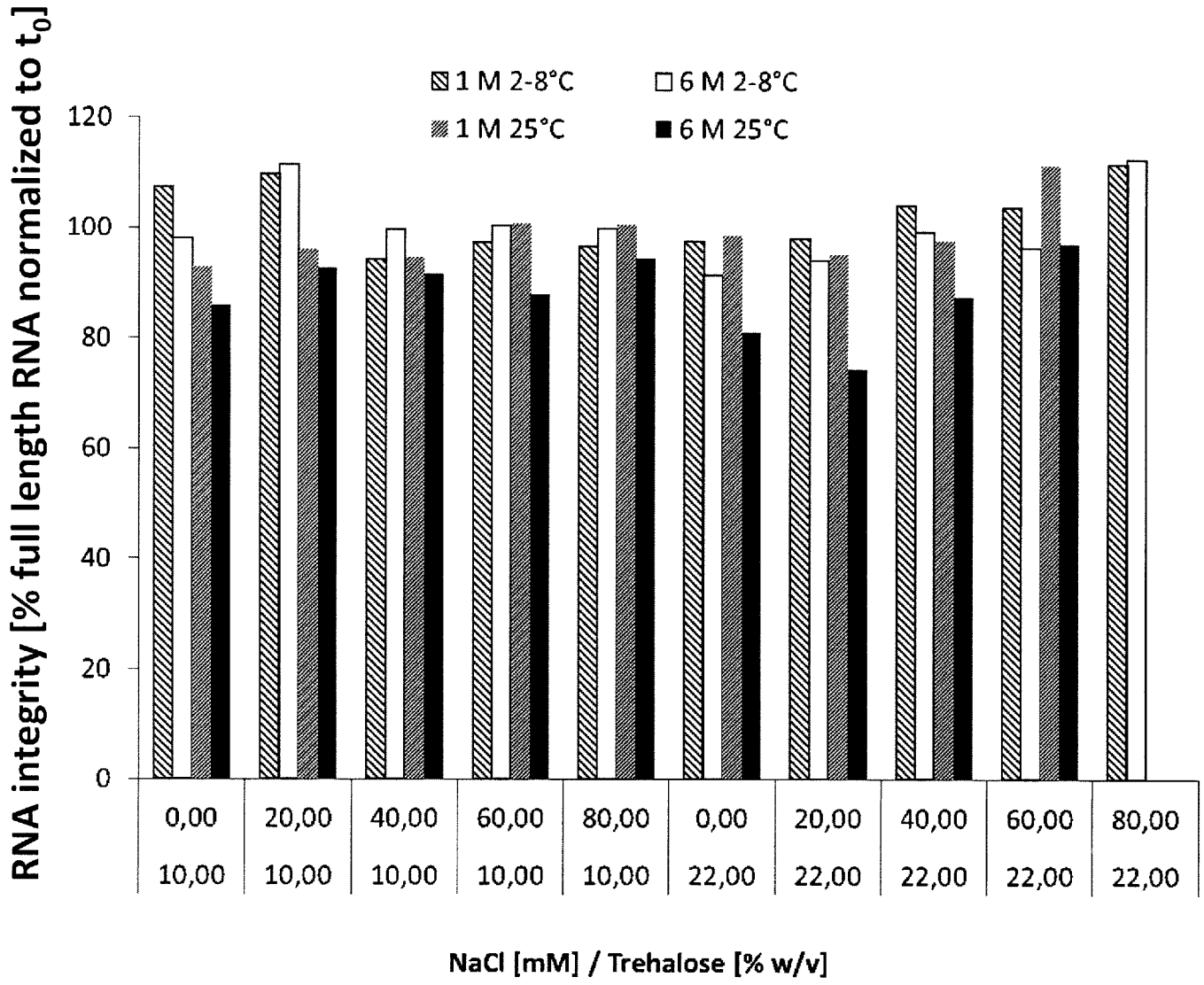

1 M 2-8°C
6 M 2-8°C
1 M 25°C
6 M 25°C
RNA integrity [% full length RNA normalized to t0]
120
100
80
60
40
20
0
0,00 10,00
20,00 10,00
40,00 10,00
60,00 10,00
80,00 10,00
0,00 22,00
20,00 22,00
40,00 22,00
60,00 22,00
80,00 22,00
NaCl [mM] / Trehalose [% w/v]

Figure 45

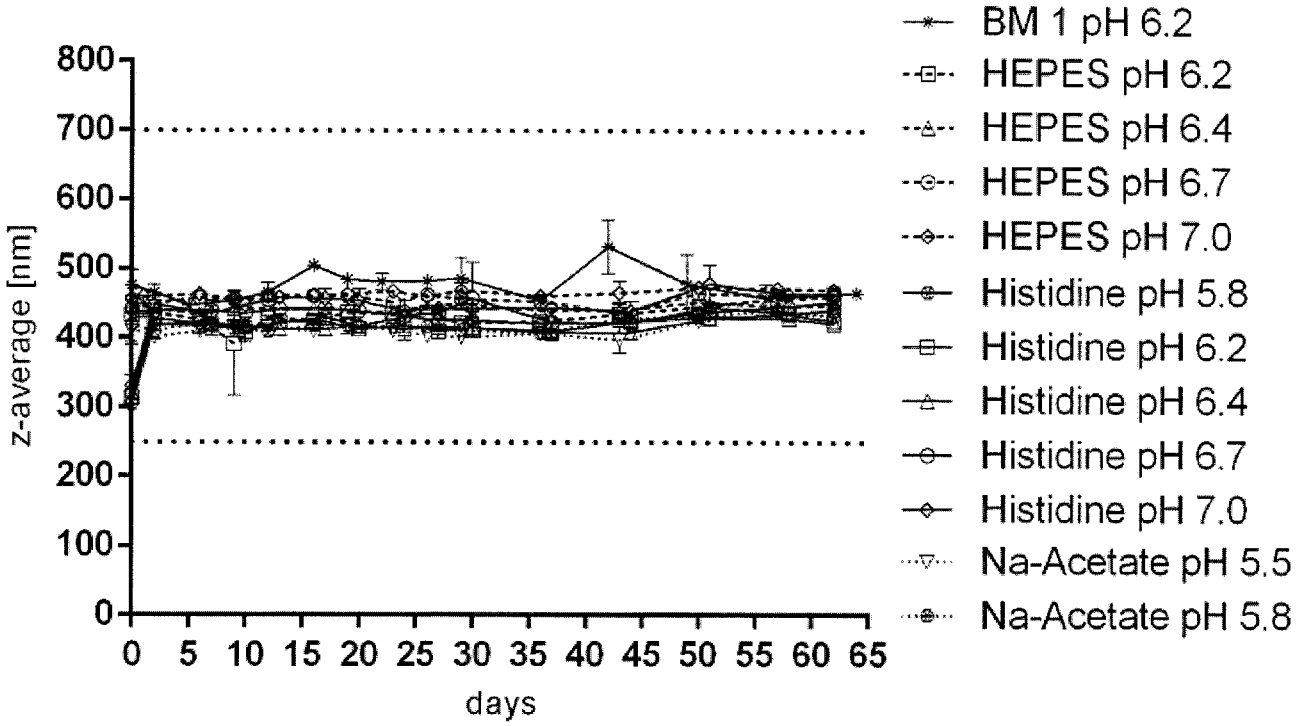

800
700
600
500
400
300
200
100
0
z-average [nm]
0 5 10 15 20 25 30 35 40 45 50 55 60 65
days
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Histidine pH 6.7
Histidine pH 7.0
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 46

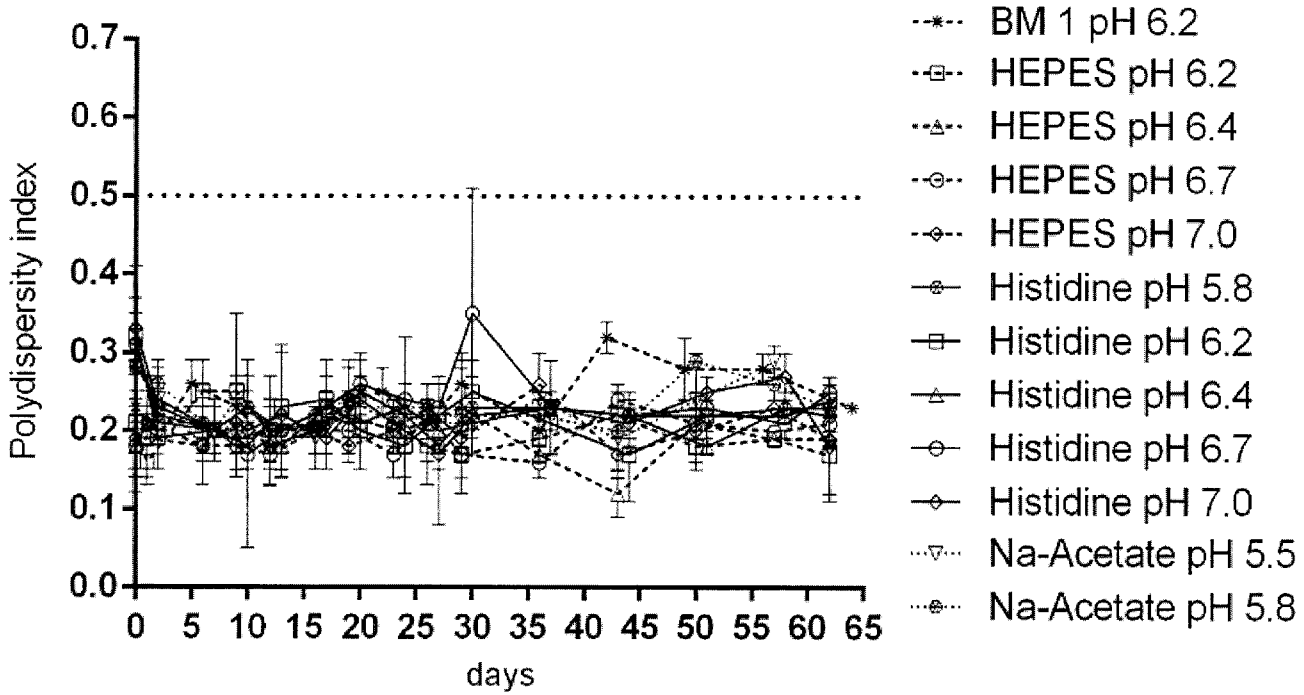

Polydispersity index
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 5 10 15 20 25 30 35 40 45 50 55 60 65
days
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Histidine pH 6.7
Histidine pH 7.0
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 47

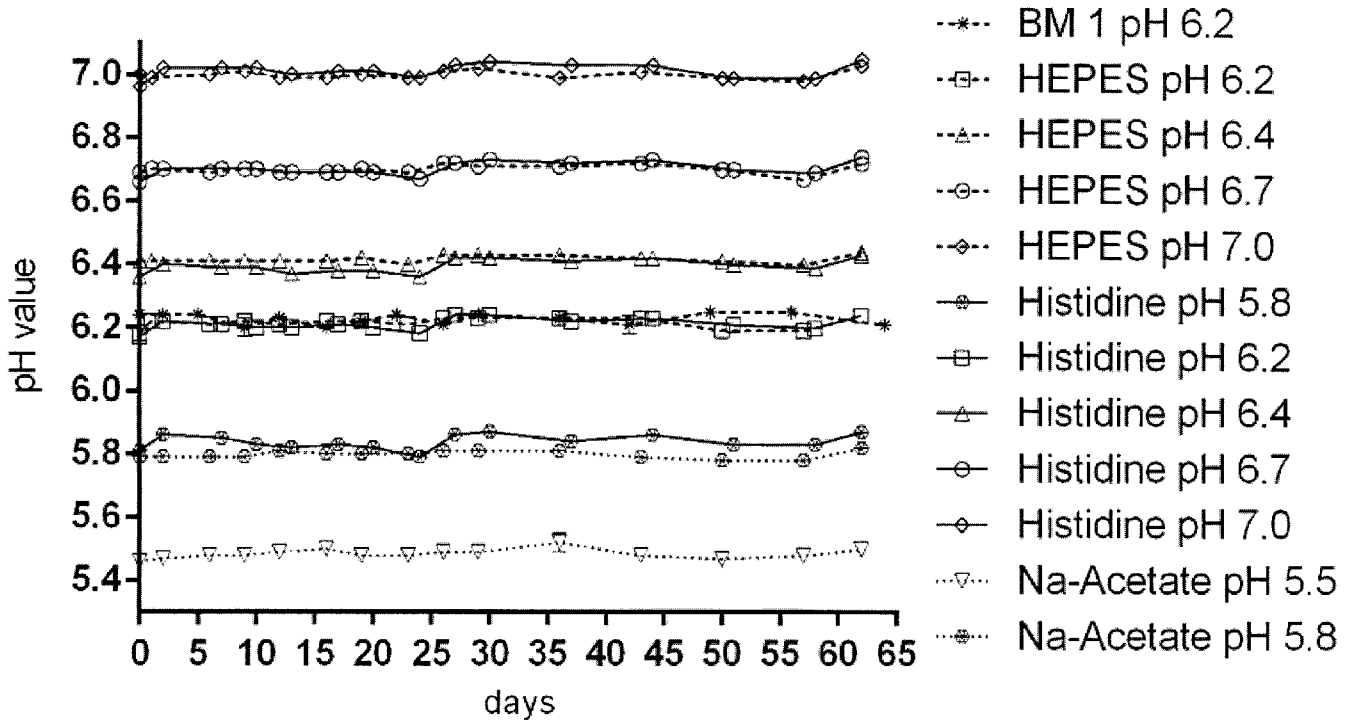

7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
pH value
0 5 10 15 20 25 30 35 40 45 50 55 60 65
days
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Histidine pH 6.7
Histidine pH 7.0
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 48

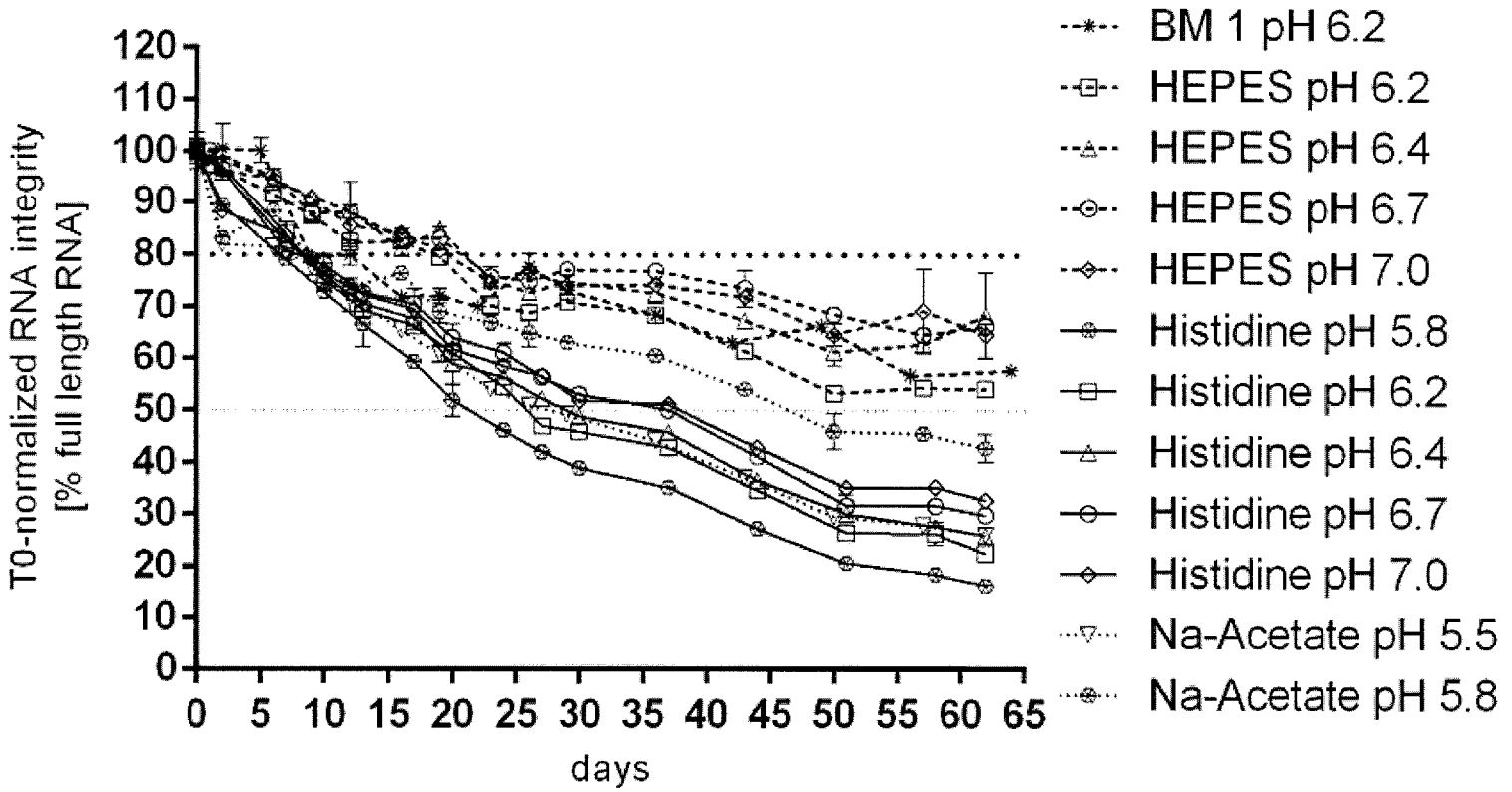

T0-normalized RNA integrity
[% full length RNA]
120
110
100
90
80
70
60
50
40
30
20
10
0
0 5 10 15 20 25 30 35 40 45 50 55 60 65
days
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Histidine pH 6.7
Histidine pH 7.0
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 49

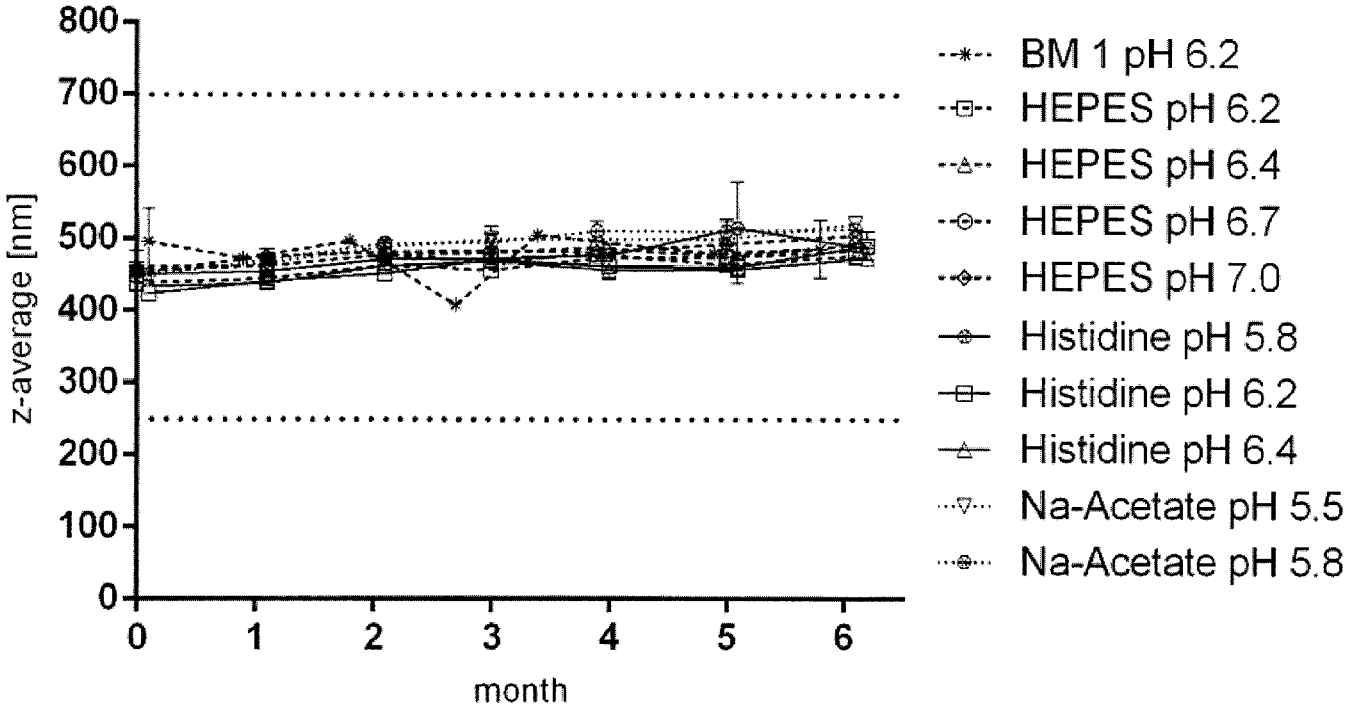

800
700
600
500
400
300
200
100
0
z-average [nm]
0
1
2
3
4
5
6
month
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 50

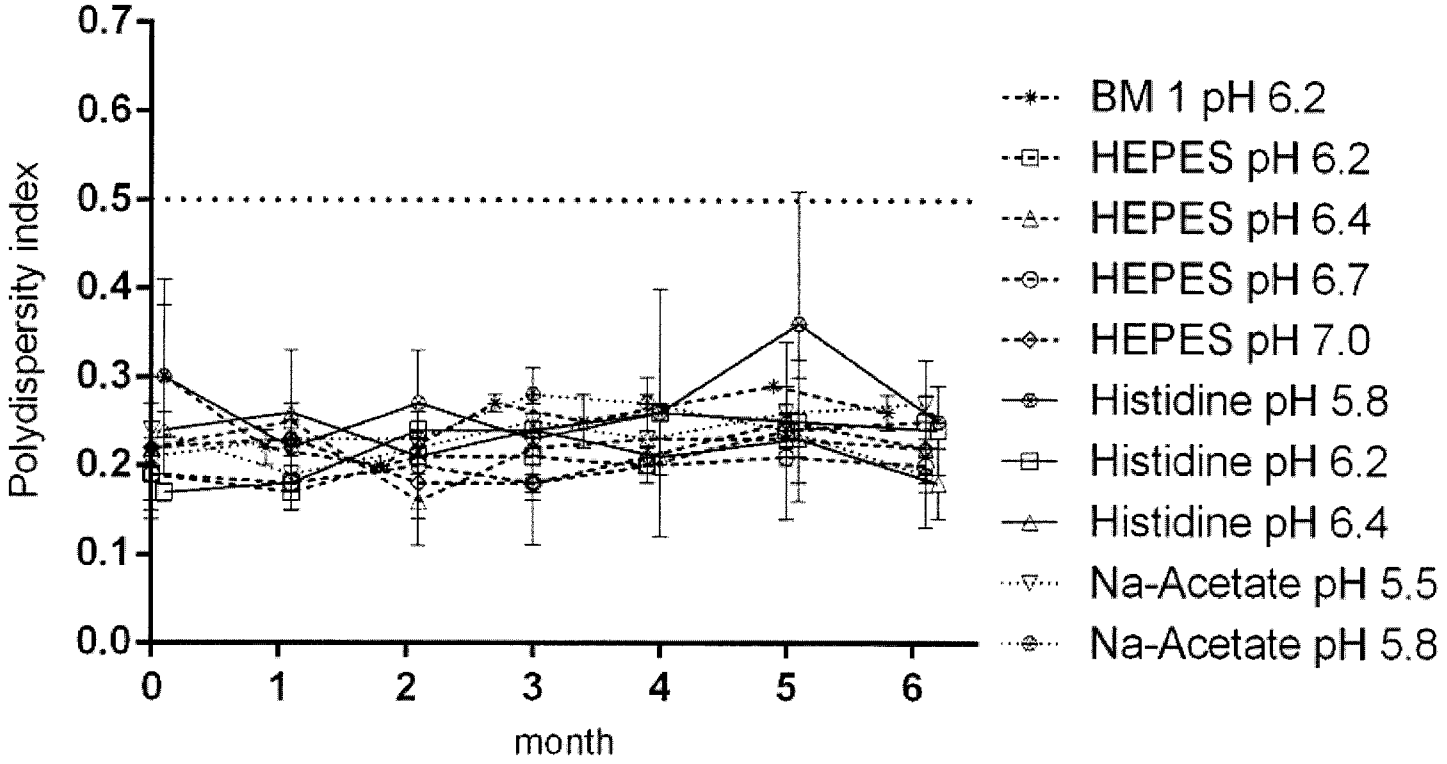

Polydispersity index
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
1
2
3
4
5
6
month
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 51

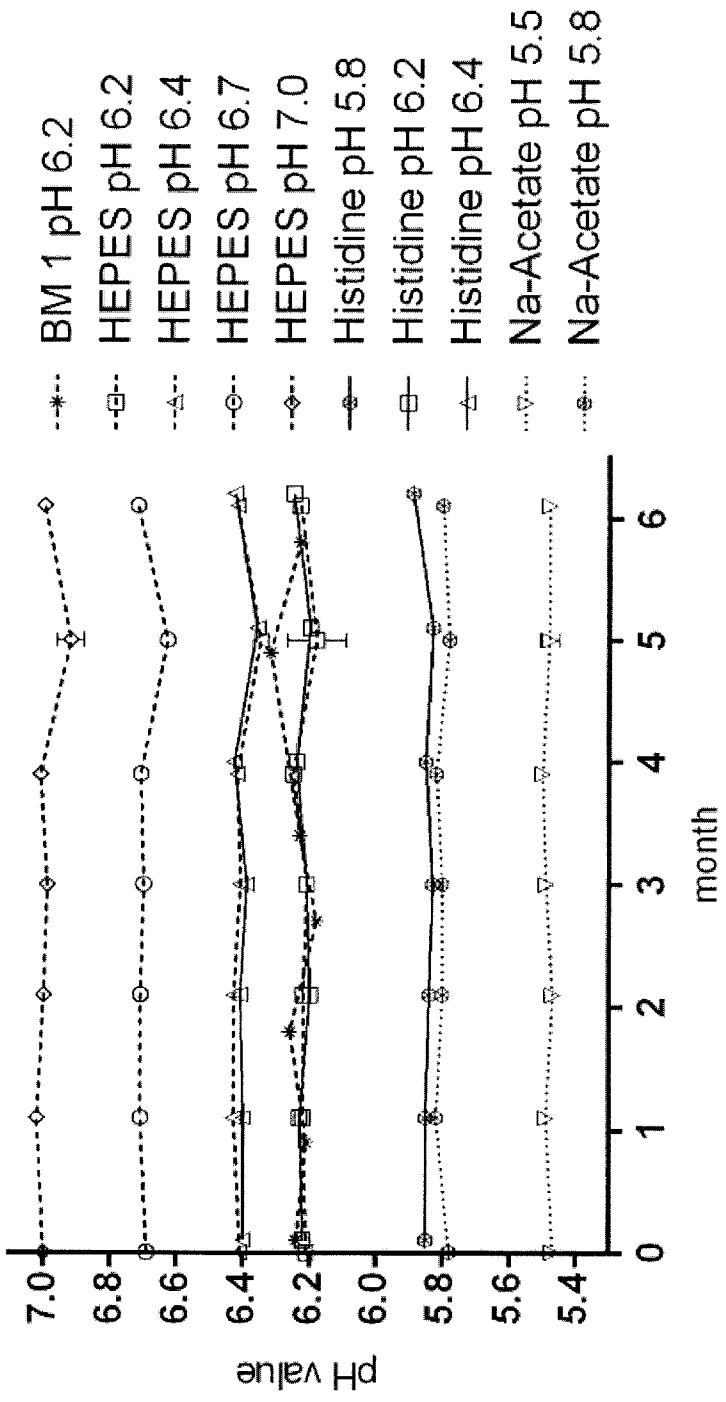

BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Na-Acetate pH 5.5
Na-Acetate pH 5.8
pH value
7.0
6.8
6.6
6.4
6.2
6.0
5.8
5.6
5.4
0
1
2
3
4
5
6
month

Figure 52

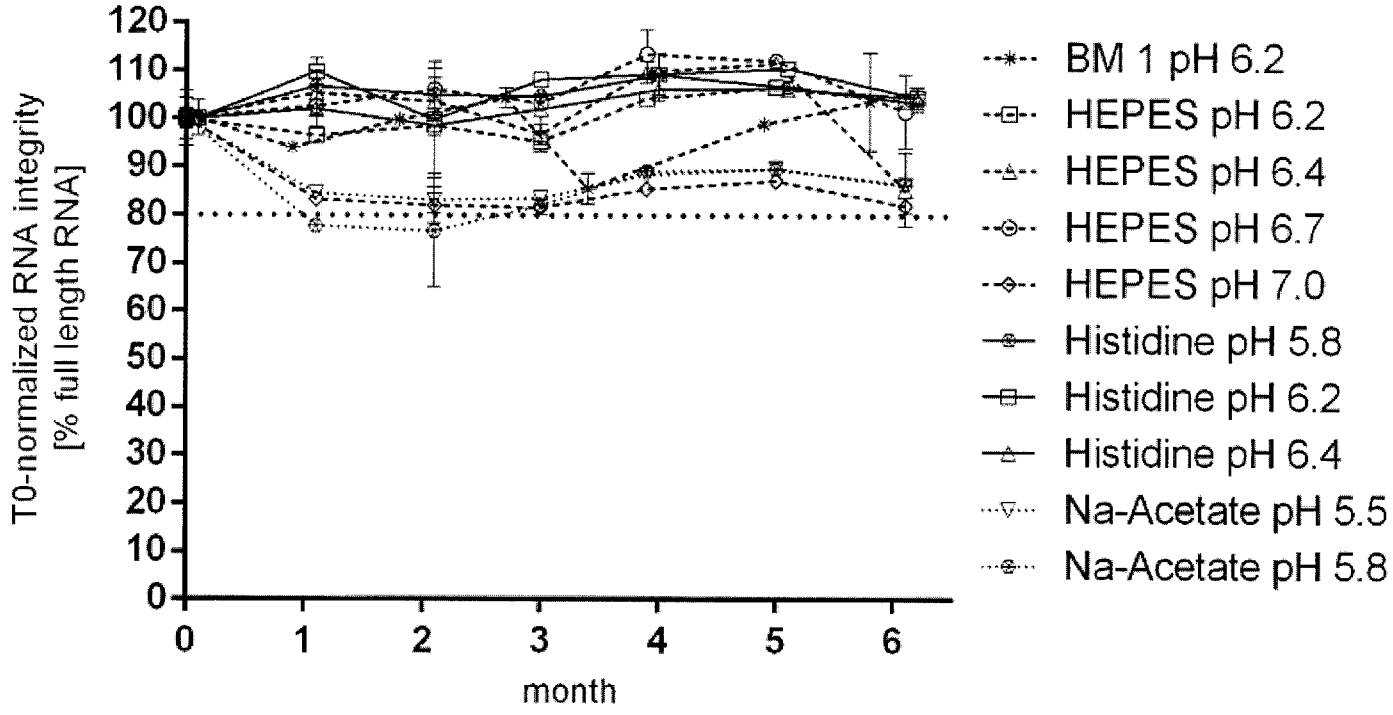

T0-normalized RNA integrity
[% full length RNA]
120
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
month
BM 1 pH 6.2
HEPES pH 6.2
HEPES pH 6.4
HEPES pH 6.7
HEPES pH 7.0
Histidine pH 5.8
Histidine pH 6.2
Histidine pH 6.4
Na-Acetate pH 5.5
Na-Acetate pH 5.8

Figure 53

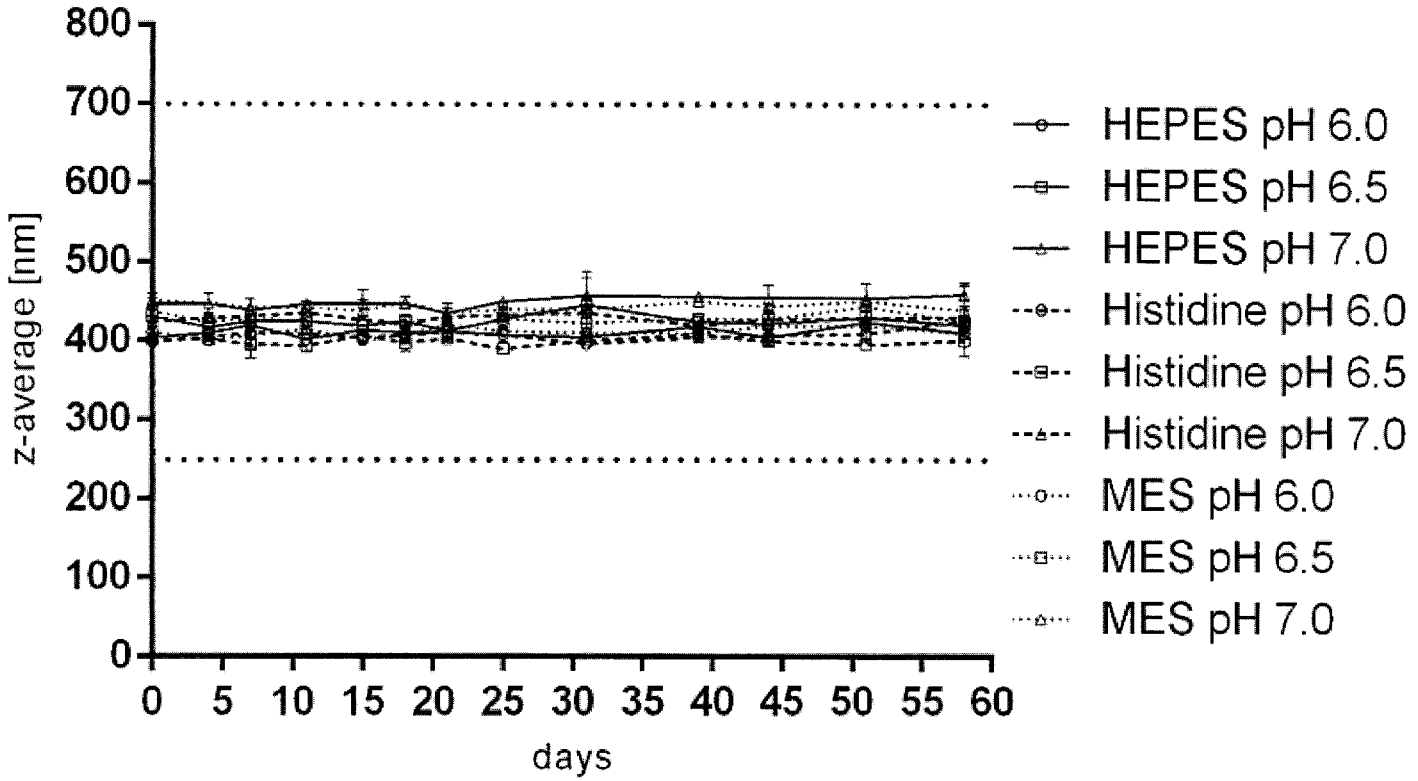

800
700
600
500
400
300
200
100
0
z-average [nm]
0 5 10 15 20 25 30 35 40 45 50 55 60
days
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 54

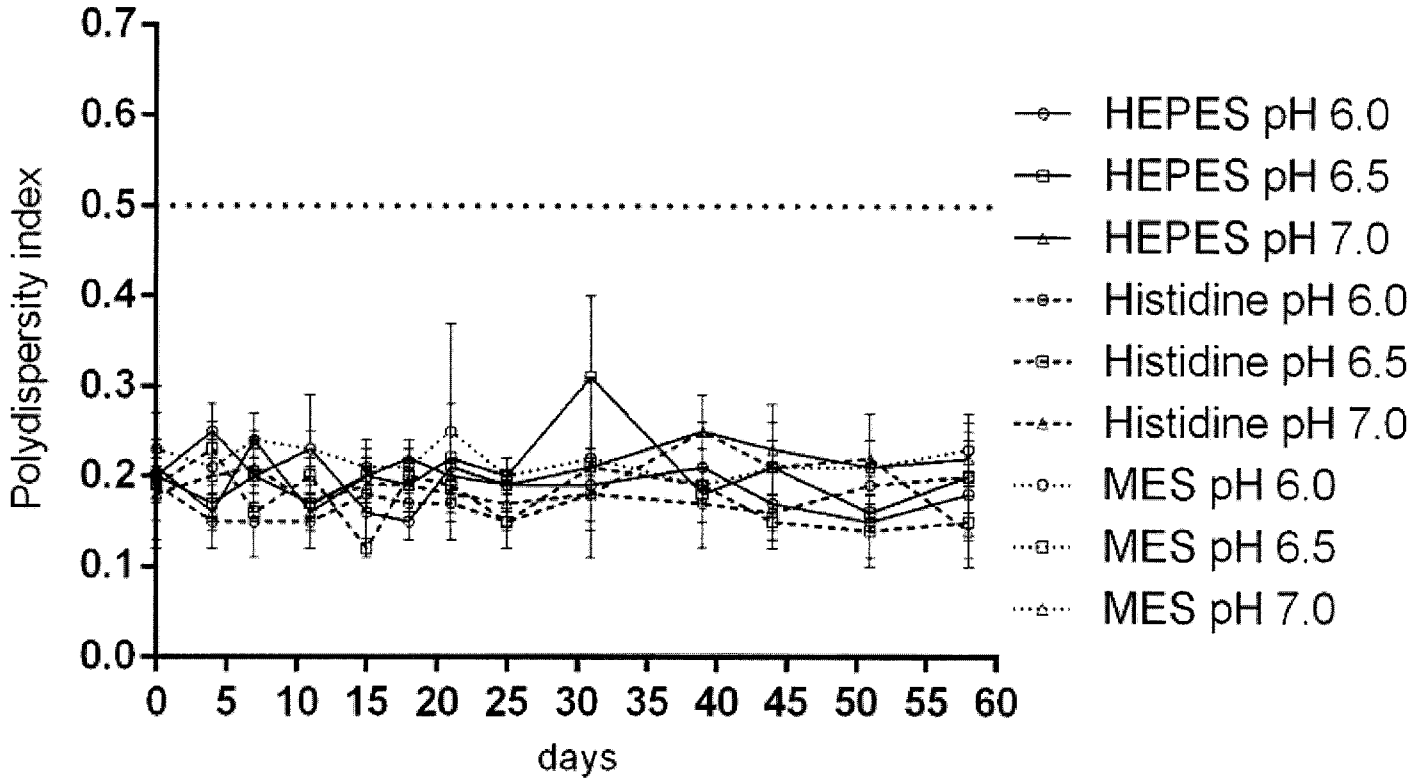

Polydispersity index
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 5 10 15 20 25 30 35 40 45 50 55 60
days
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 55

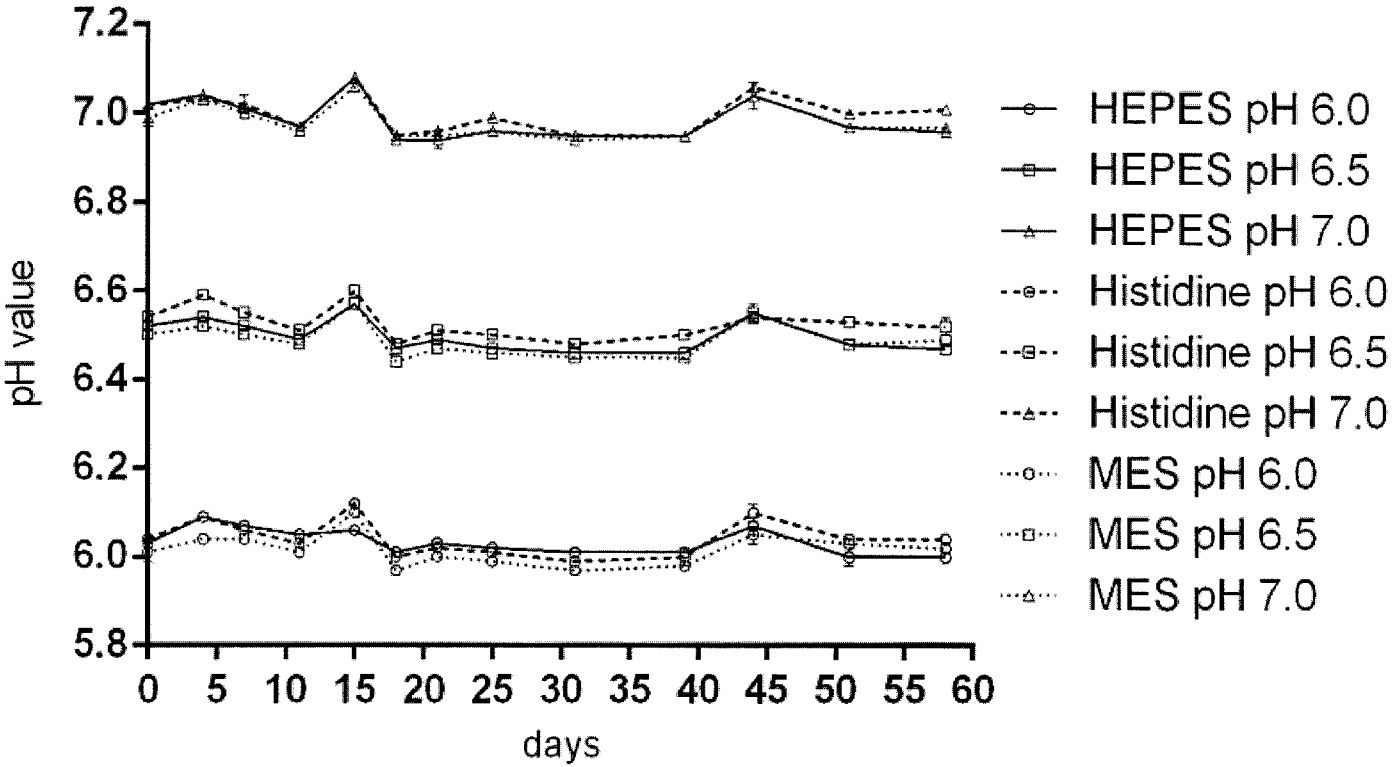

7.2
7.0
6.8
6.6
6.4
6.2
6.0
5.8
pH value
0 5 10 15 20 25 30 35 40 45 50 55 60
days
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 56

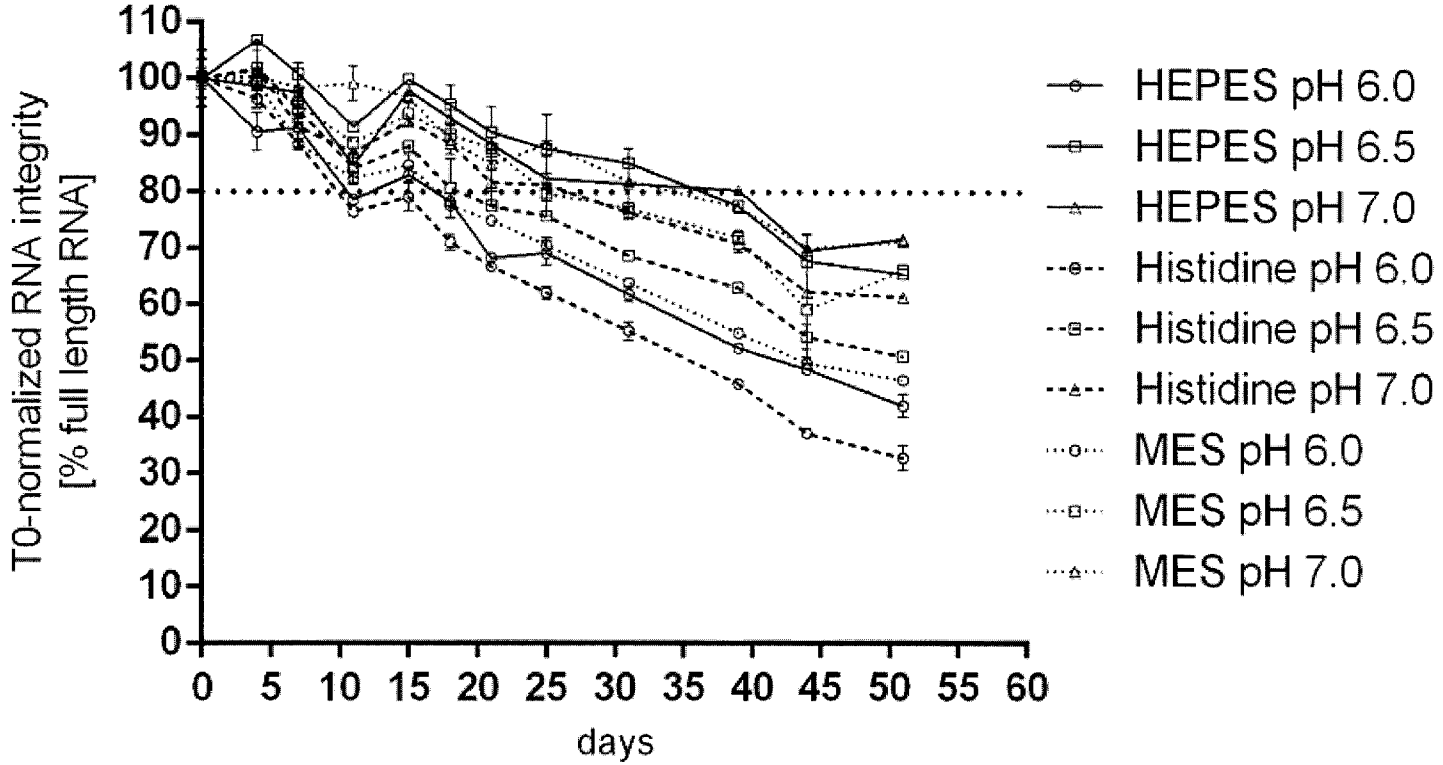

T0-normalized RNA integrity
[% full length RNA]
110
100
90
80
70
60
50
40
30
20
10
0
0 5 10 15 20 25 30 35 40 45 50 55 60
days
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 57

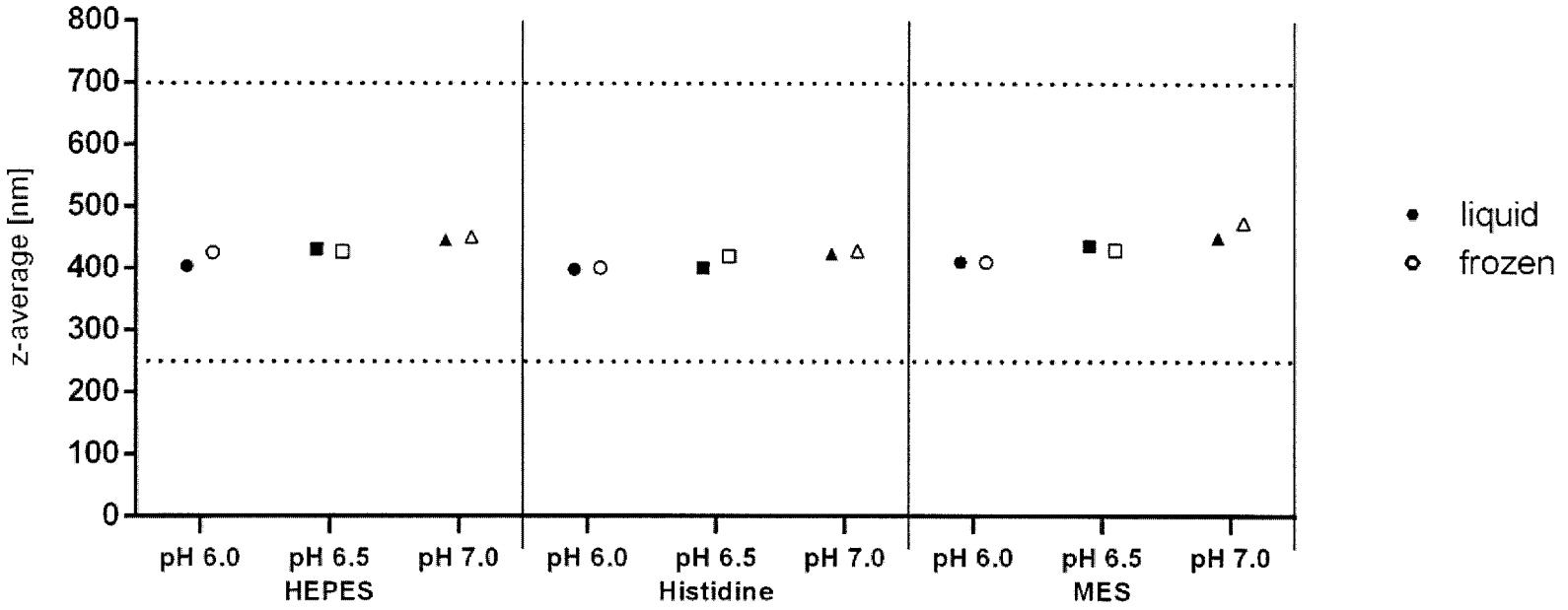

800
700
600
500
400
300
200
100
0
z-average [nm]
pH 6.0
pH 6.5
pH 7.0
HEPES
pH 6.0
pH 6.5
pH 7.0
Histidine
pH 6.0
pH 6.5
pH 7.0
MES
liquid
frozen

Figure 58

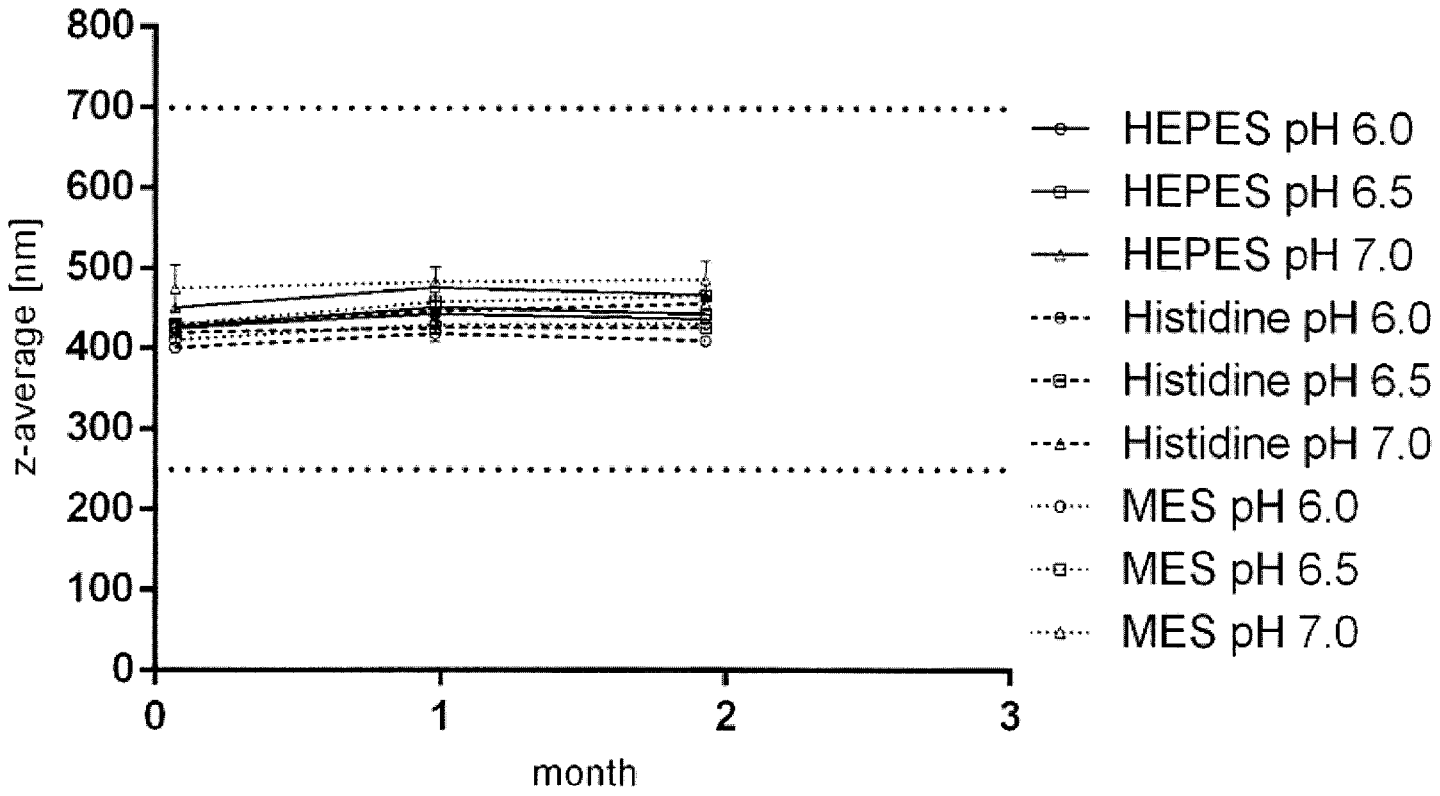

800
700
600
500
400
300
200
100
0
z-average [nm]
0
1
2
3
month
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 59

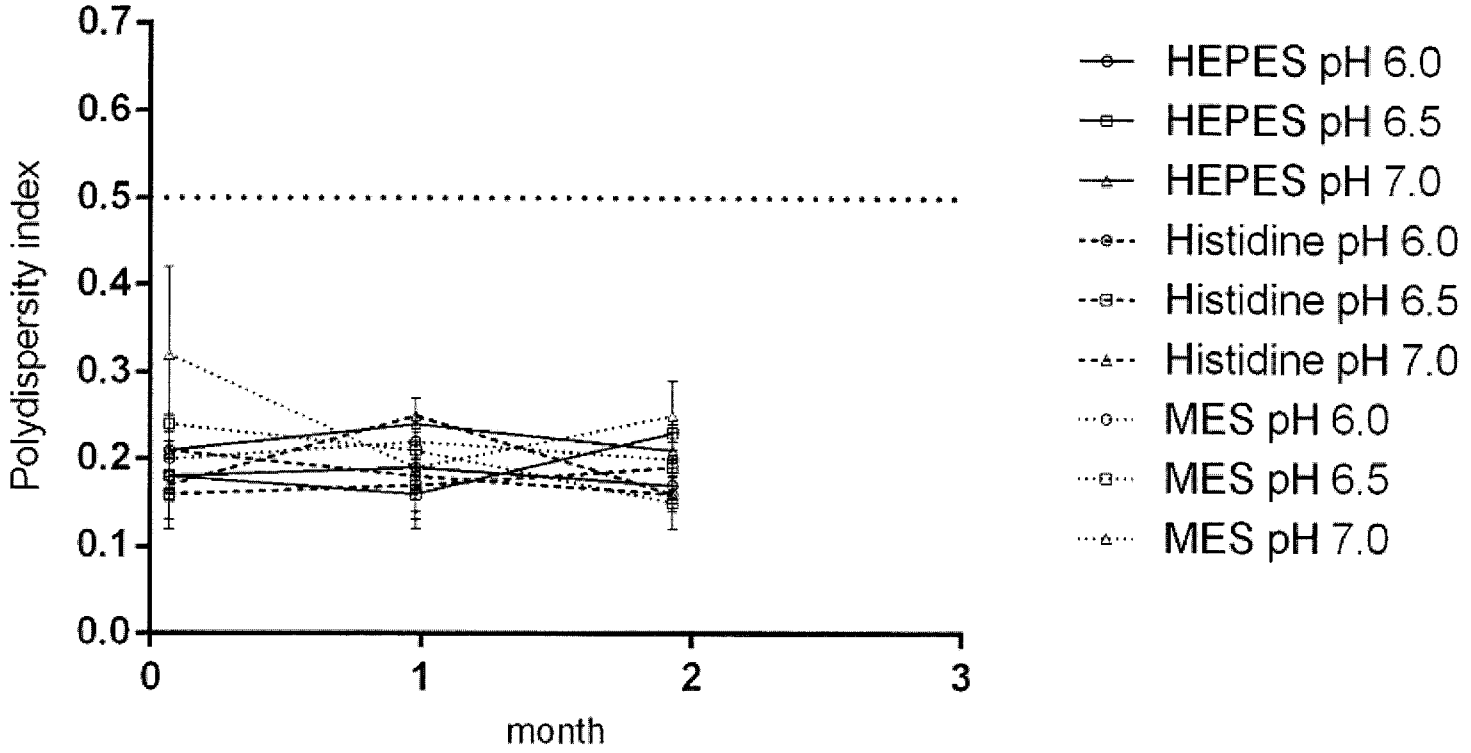

0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Polydispersity index
0
1
2
3
month
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 60

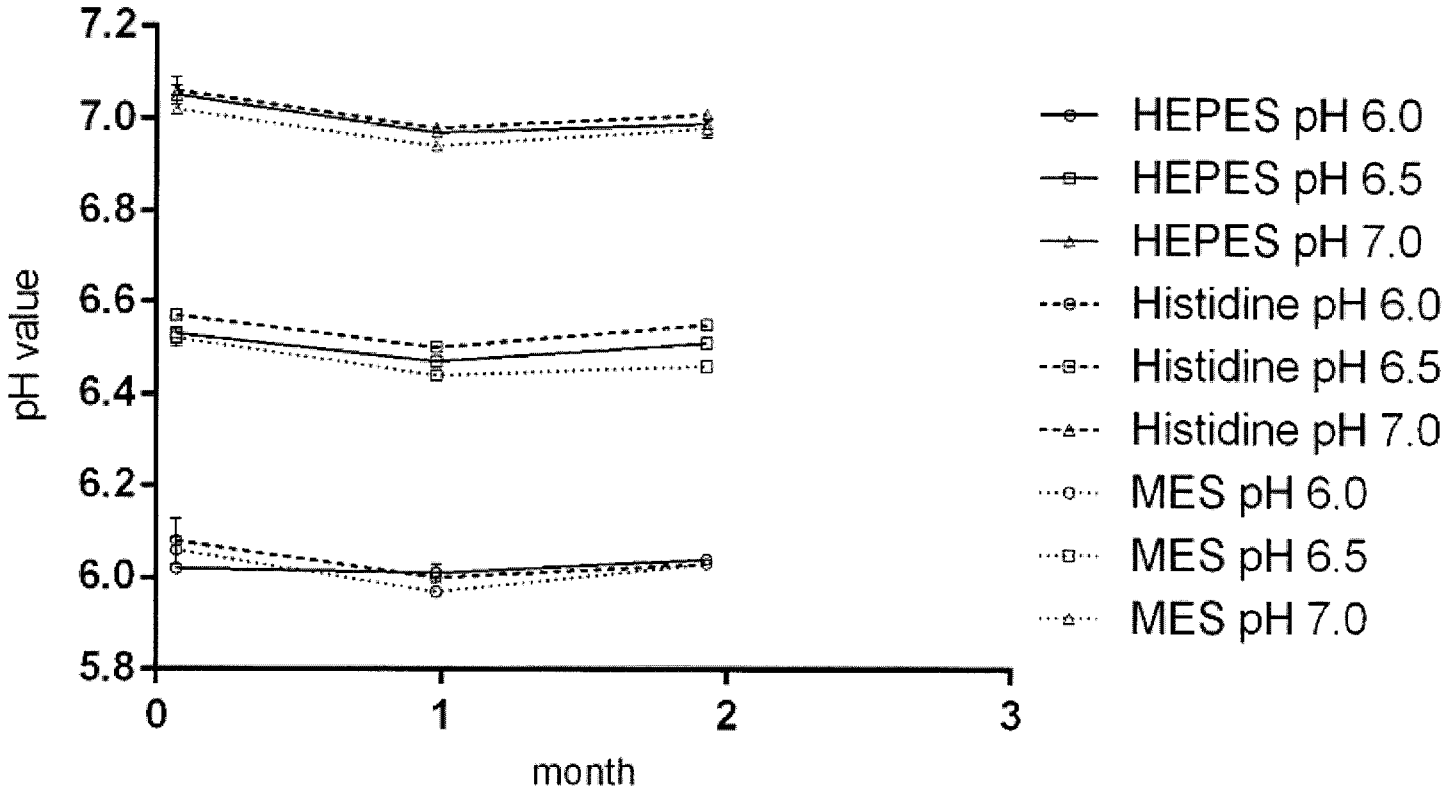

7.2
7.0
6.8
6.6
6.4
6.2
6.0
5.8
pH value
0
1
2
3
month
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 61

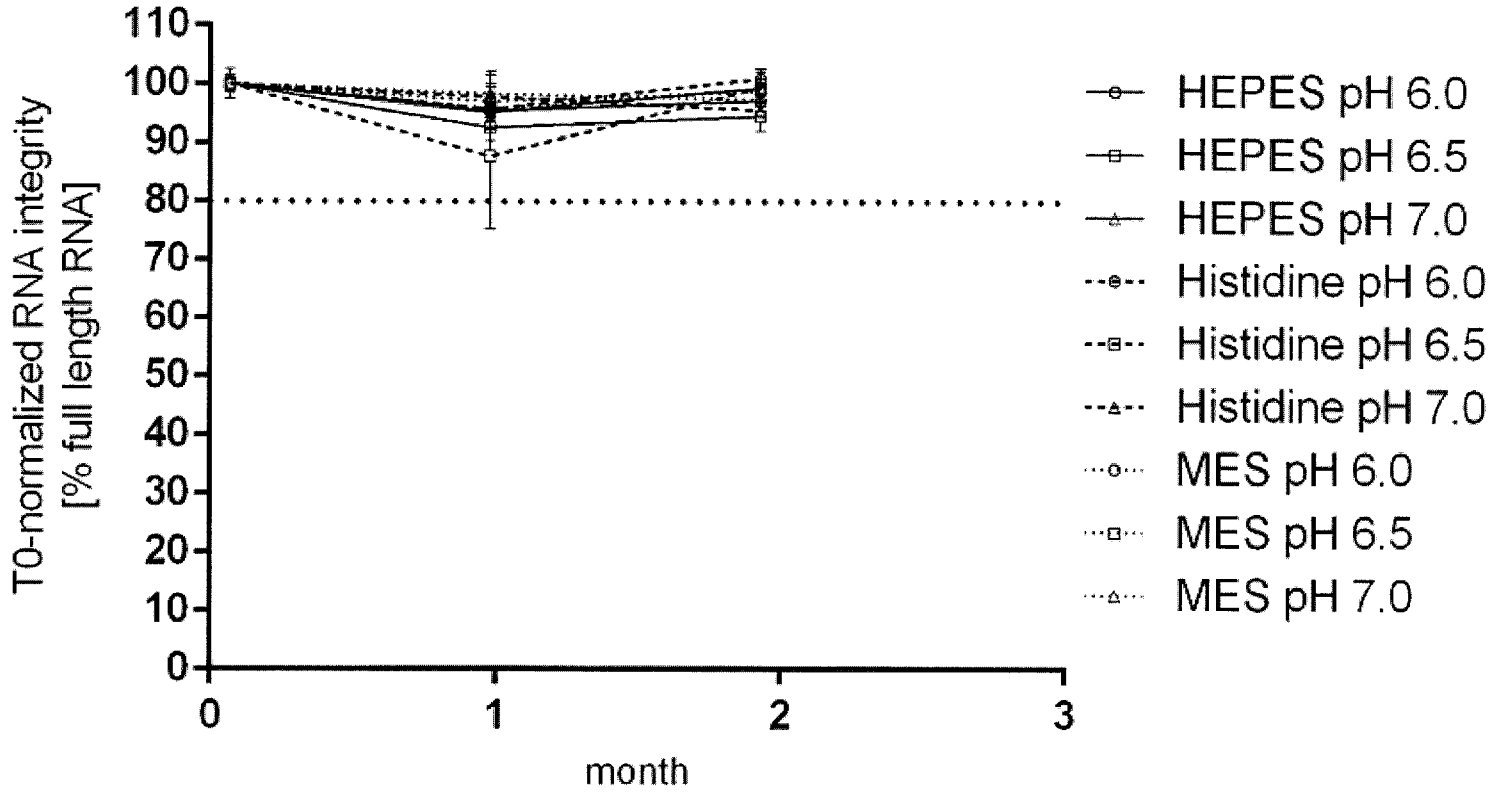

T0-normalized RNA integrity
[% full length RNA]
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
month
HEPES pH 6.0
HEPES pH 6.5
HEPES pH 7.0
Histidine pH 6.0
Histidine pH 6.5
Histidine pH 7.0
MES pH 6.0
MES pH 6.5
MES pH 7.0

Figure 62

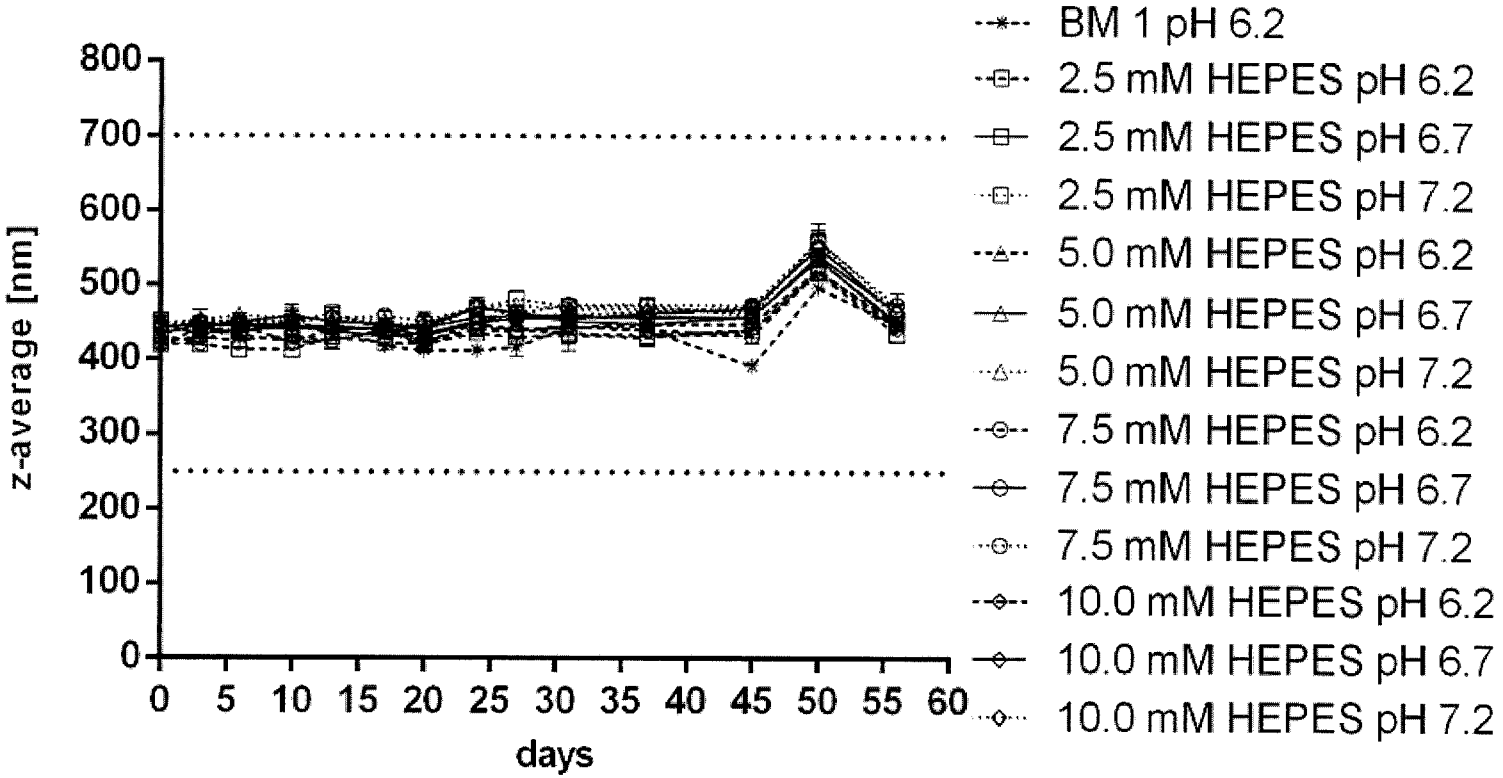

z-average [nm]
800
700
600
500
400
300
200
100
0
0 5 10 15 20 25 30 35 40 45 50 55 60
days
BM 1 pH 6.2
2.5 mM HEPES pH 6.2
2.5 mM HEPES pH 6.7
2.5 mM HEPES pH 7.2
5.0 mM HEPES pH 6.2
5.0 mM HEPES pH 6.7
5.0 mM HEPES pH 7.2
7.5 mM HEPES pH 6.2
7.5 mM HEPES pH 6.7
7.5 mM HEPES pH 7.2
10.0 mM HEPES pH 6.2
10.0 mM HEPES pH 6.7
10.0 mM HEPES pH 7.2

Figure 63

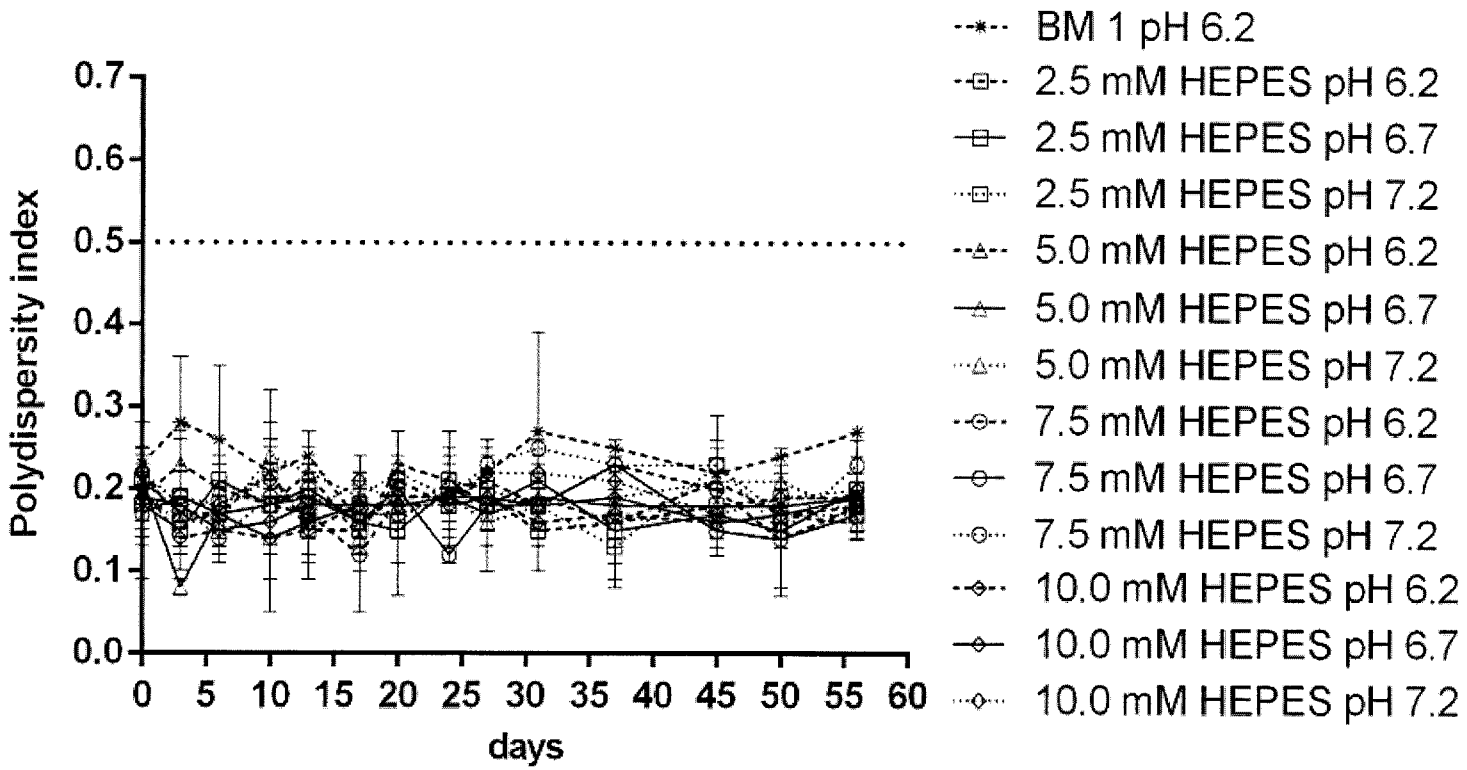

Polydispersity index
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0 5 10 15 20 25 30 35 40 45 50 55 60
days
BM 1 pH 6.2
2.5 mM HEPES pH 6.2
2.5 mM HEPES pH 6.7
2.5 mM HEPES pH 7.2
5.0 mM HEPES pH 6.2
5.0 mM HEPES pH 6.7
5.0 mM HEPES pH 7.2
7.5 mM HEPES pH 6.2
7.5 mM HEPES pH 6.7
7.5 mM HEPES pH 7.2
10.0 mM HEPES pH 6.2
10.0 mM HEPES pH 6.7
10.0 mM HEPES pH 7.2

Figure 64

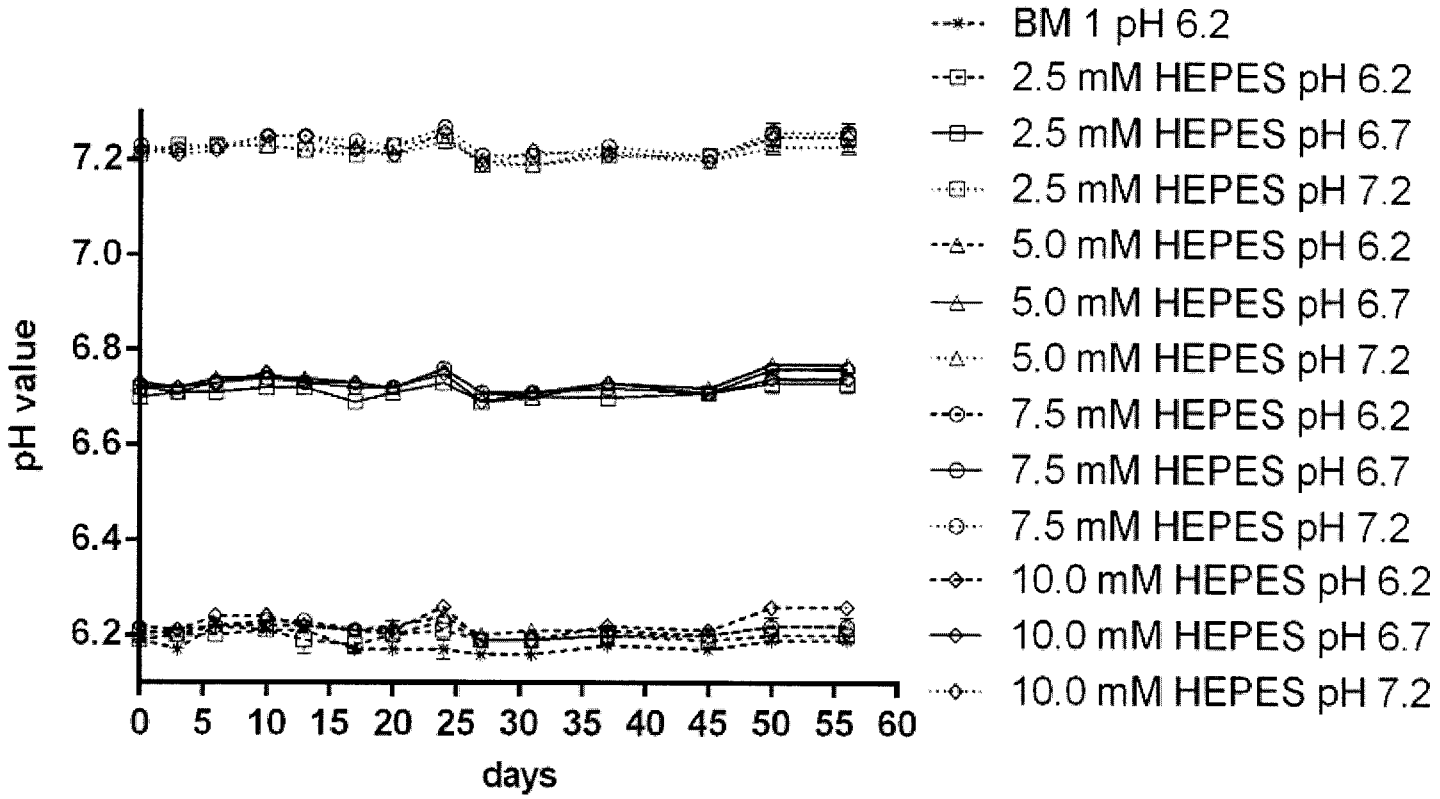

pH value
7.2
7.0
6.8
6.6
6.4
6.2
0
5
10
15
20
25
30
35
40
45
50
55
60
days
BM 1 pH 6.2
2.5 mM HEPES pH 6.2
2.5 mM HEPES pH 6.7
2.5 mM HEPES pH 7.2
5.0 mM HEPES pH 6.2
5.0 mM HEPES pH 6.7
5.0 mM HEPES pH 7.2
7.5 mM HEPES pH 6.2
7.5 mM HEPES pH 6.7
7.5 mM HEPES pH 7.2
10.0 mM HEPES pH 6.2
10.0 mM HEPES pH 6.7
10.0 mM HEPES pH 7.2

Figure 65

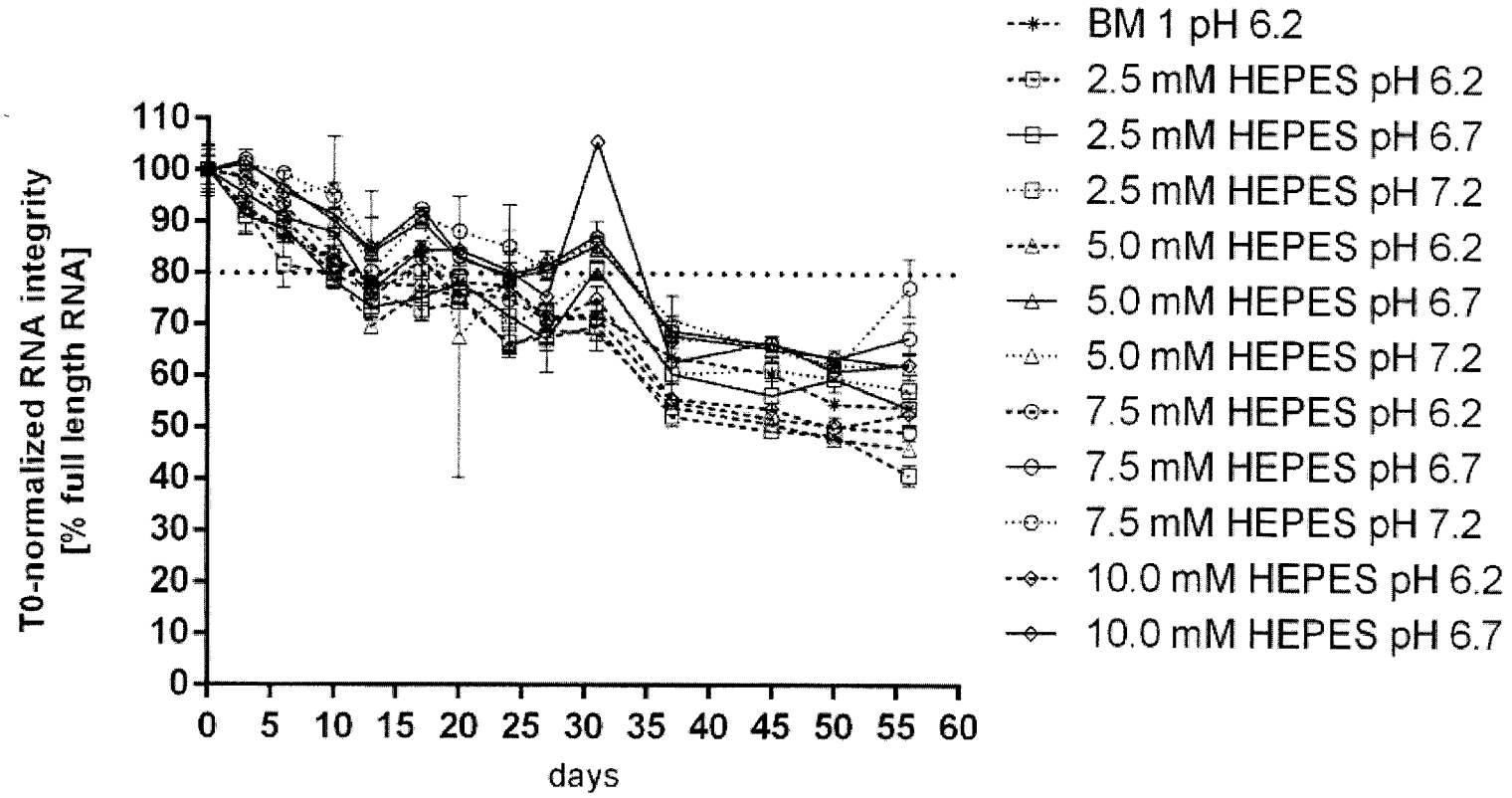

T0-normalized RNA integrity
[% full length RNA]
110
100
90
80
70
60
50
40
30
20
10
0
0 5 10 15 20 25 30 35 40 45 50 55 60
days
BM 1 pH 6.2
2.5 mM HEPES pH 6.2
2.5 mM HEPES pH 6.7
2.5 mM HEPES pH 7.2
5.0 mM HEPES pH 6.2
5.0 mM HEPES pH 6.7
5.0 mM HEPES pH 7.2
7.5 mM HEPES pH 6.2
7.5 mM HEPES pH 6.7
7.5 mM HEPES pH 7.2
10.0 mM HEPES pH 6.2
10.0 mM HEPES pH 6.7

Figure 66

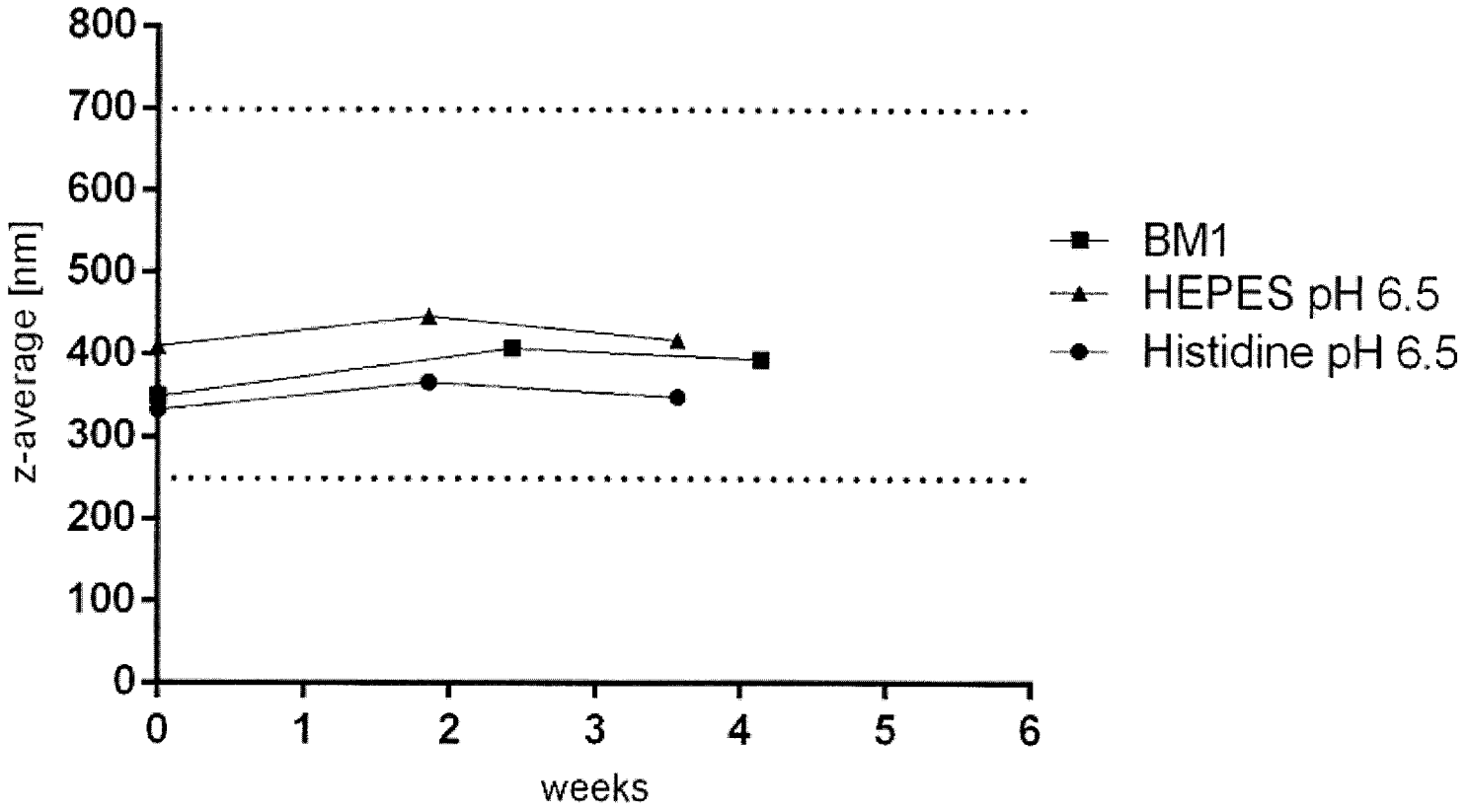

800
700
600
500
400
300
200
100
0
z-average [nm]
0
1
2
3
4
5
6
weeks
BM1
HEPES pH 6.5
Histidine pH 6.5

Figure 67

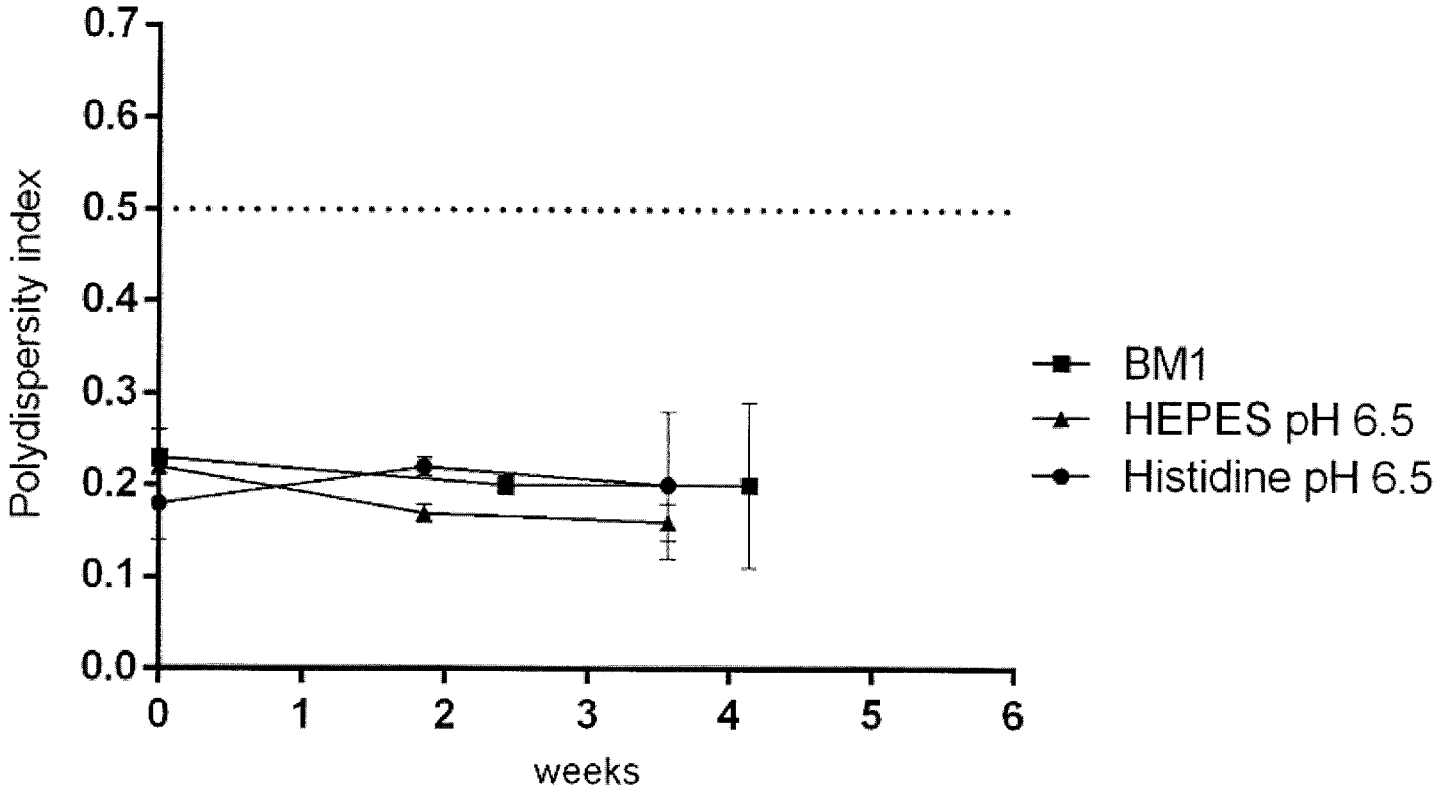

0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Polydispersity index
0
1
2
3
4
5
6
weeks
BM1
HEPES pH 6.5
Histidine pH 6.5

Figure 68

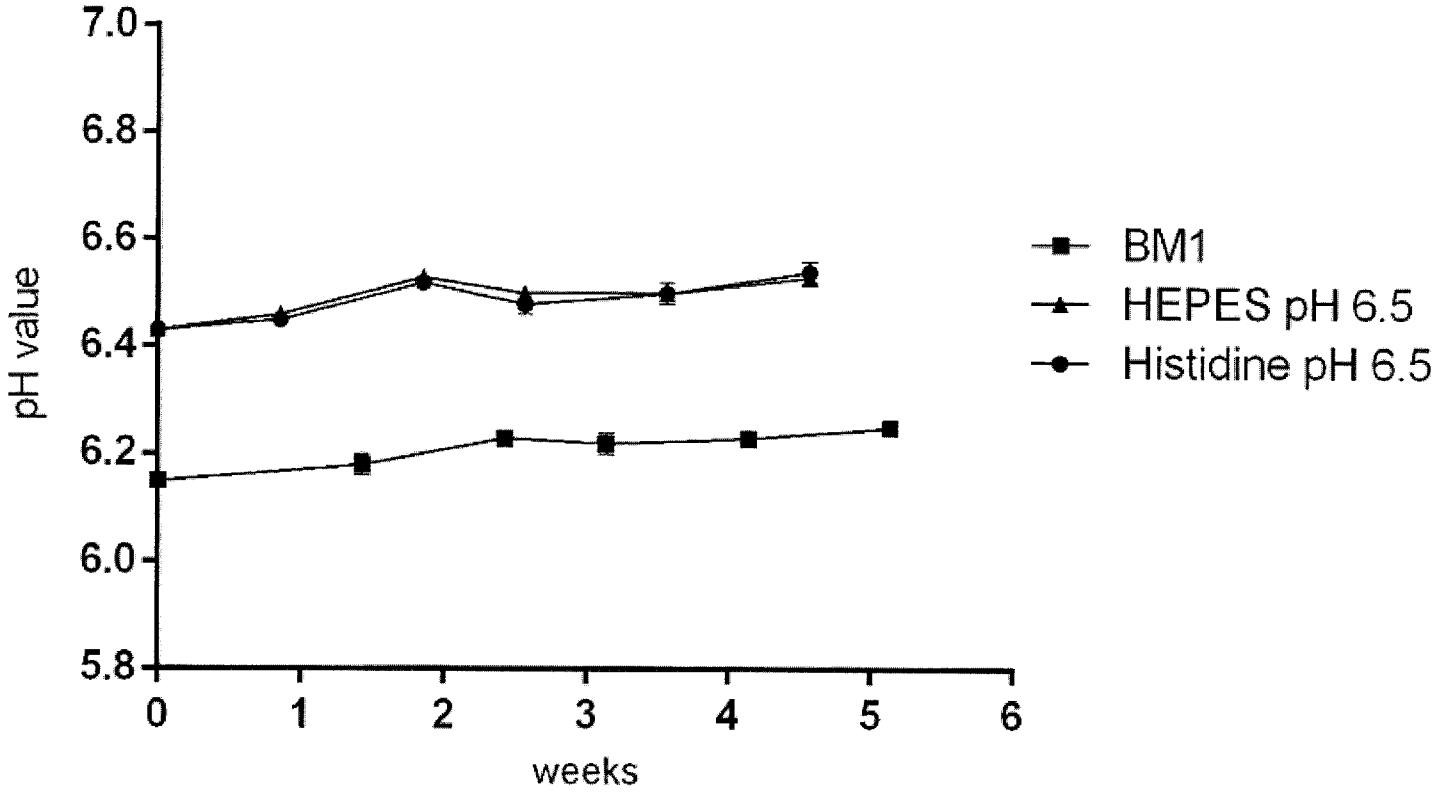

7.0
6.8
6.6
6.4
6.2
6.0
5.8
pH value
0
1
2
3
4
5
6
weeks
BM1
HEPES pH 6.5
Histidine pH 6.5

Figure 69

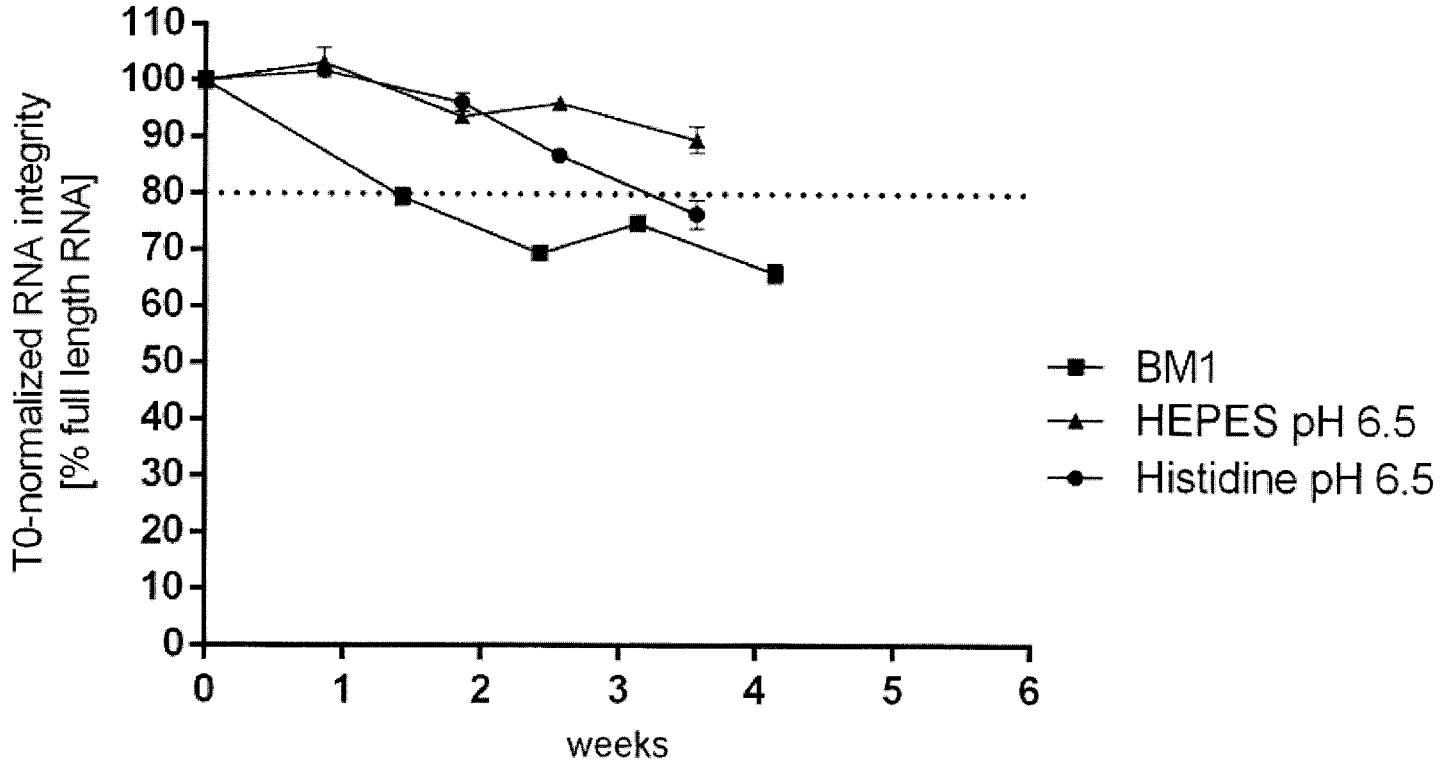

T0-normalized RNA integrity
[% full length RNA]
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
weeks
BM1
HEPES pH 6.5
Histidine pH 6.5

Figure 70

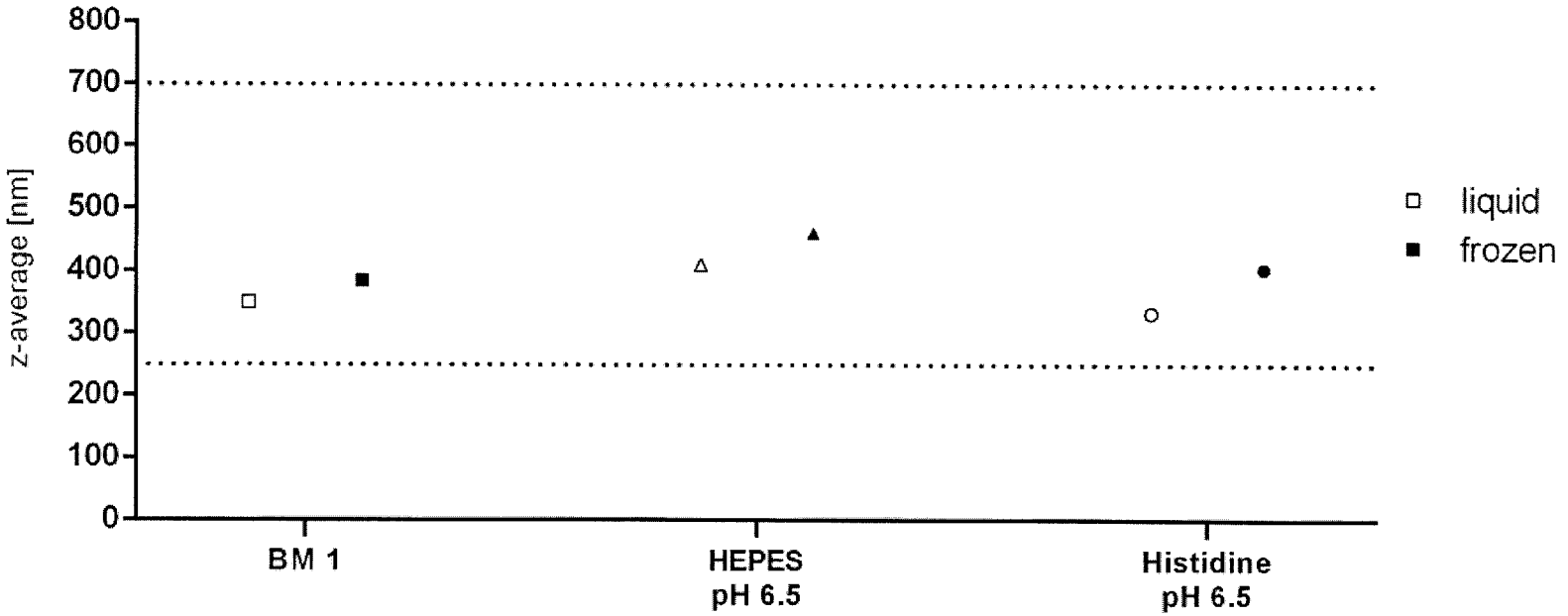

800
700
600
500
400
300
200
100
0
z-average [nm]
BM 1
HEPES
pH 6.5
Histidine
pH 6.5
liquid
frozen

Figure 71