FIG. 1

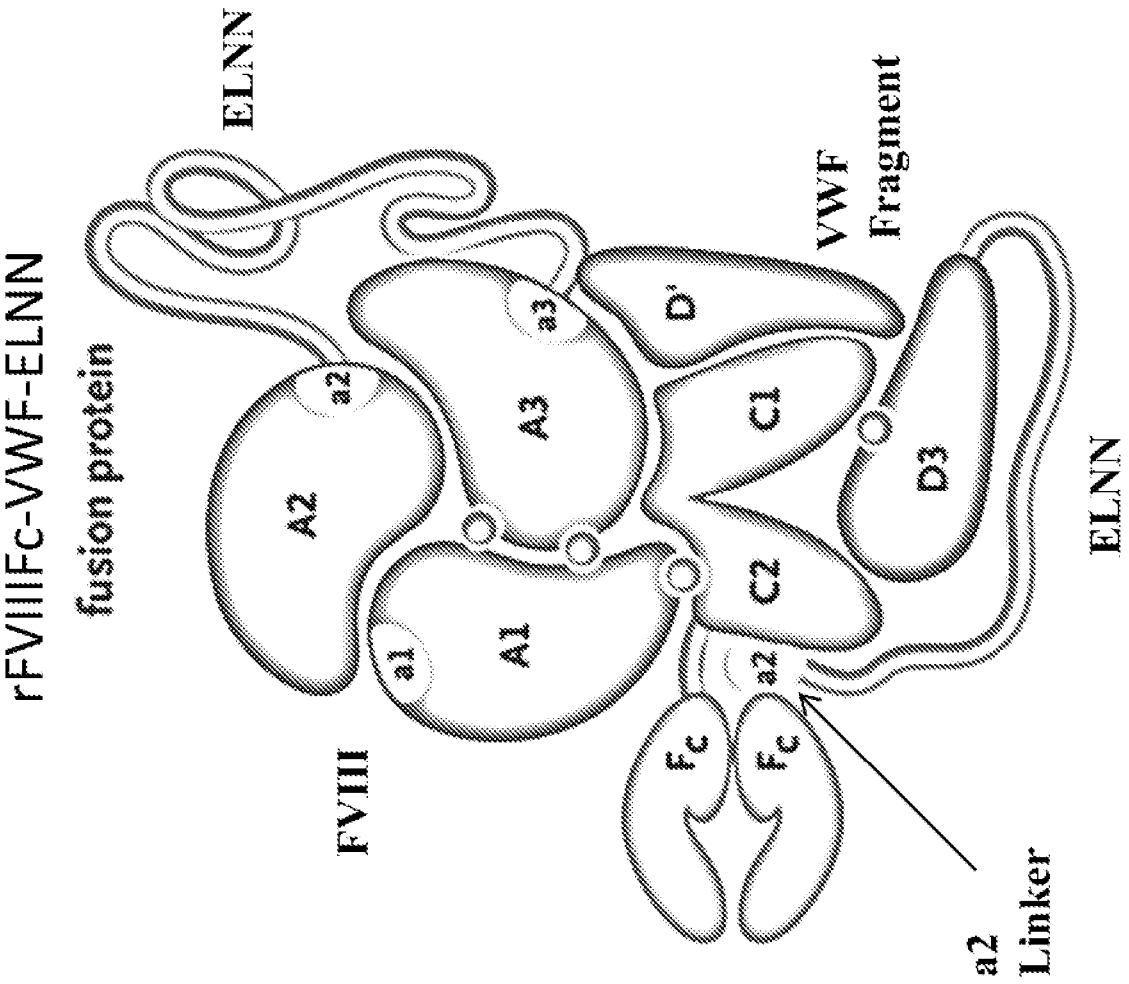

rFVIIIFc-VWF-ELNN
fusion protein
ELNN
VWF
Fragment
FVIII
A2
a2
A3
a3
D'
C1
D3
a1
A1
C2
a2
Fc
Fc
ELNN
a2
Linker

FIG. 2

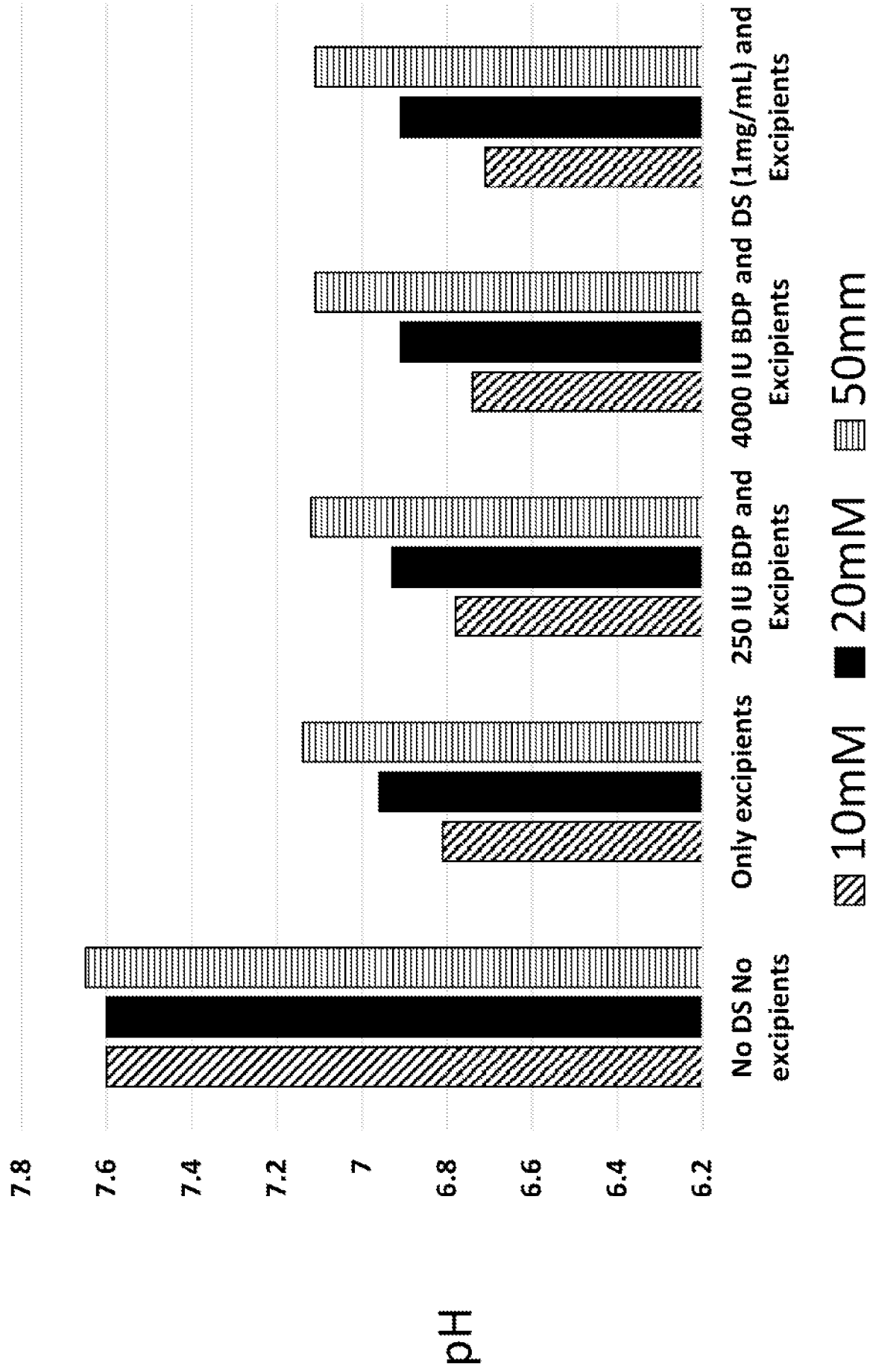

pH
7.8
7.6
7.4
7.2
7
6.8
6.6
6.4
6.2
No DS No excipients
Only excipients
250 IU BDP and Excipients
4000 IU BDP and DS (1mg/mL) and Excipients
Excipients
10mM
20mM
50mm

FIG. 3

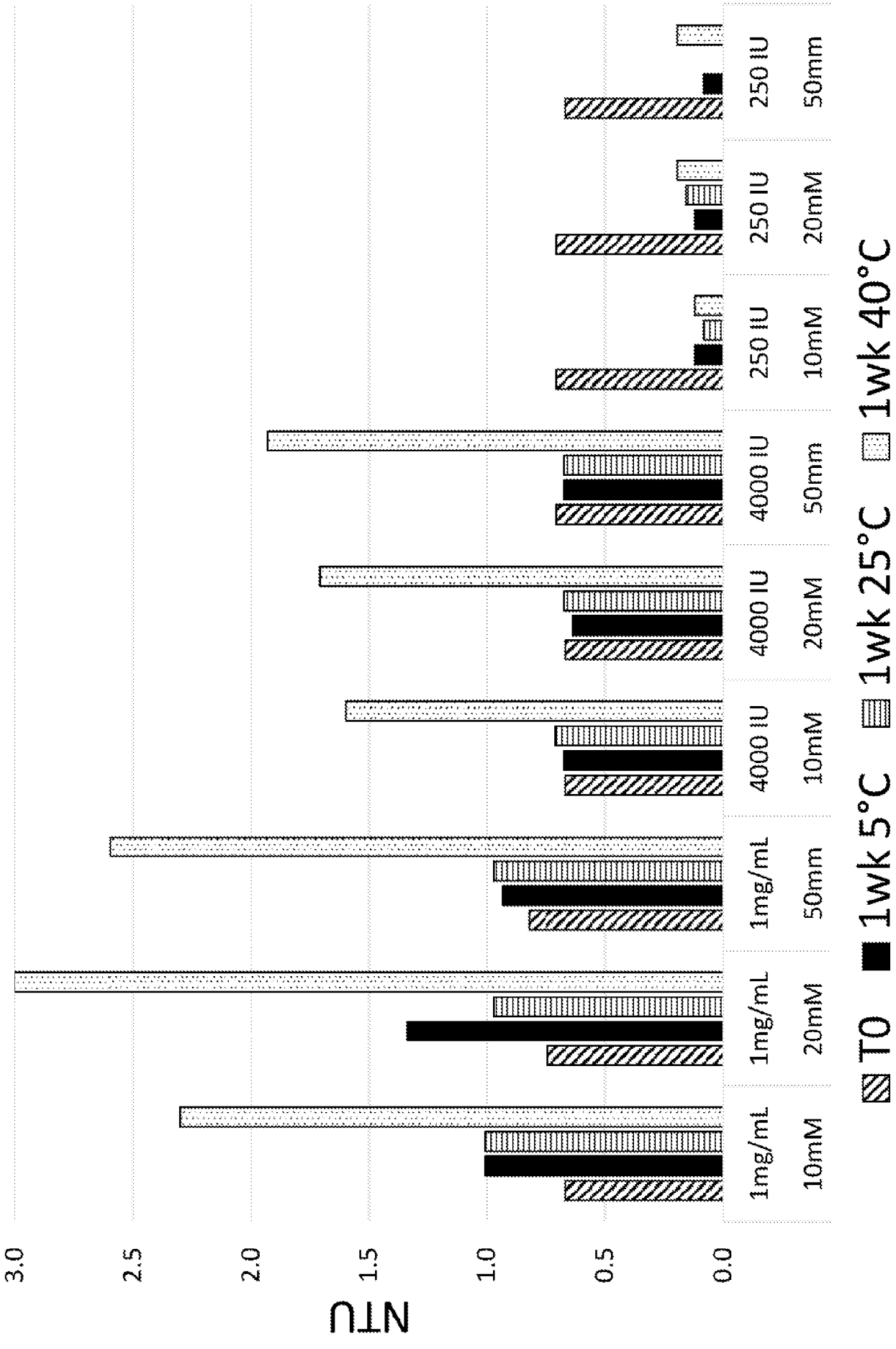

NTU
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1mg/mL 10mM
1mg/mL 20mM
1mg/mL 50mm
4000 IU 10mM
4000 IU 20mM
4000 IU 50mm
250 IU 10mM
250 IU 20mM
250 IU 50mm
T0
1wk 5°C
1wk 25°C
1wk 40°C

FIG. 4

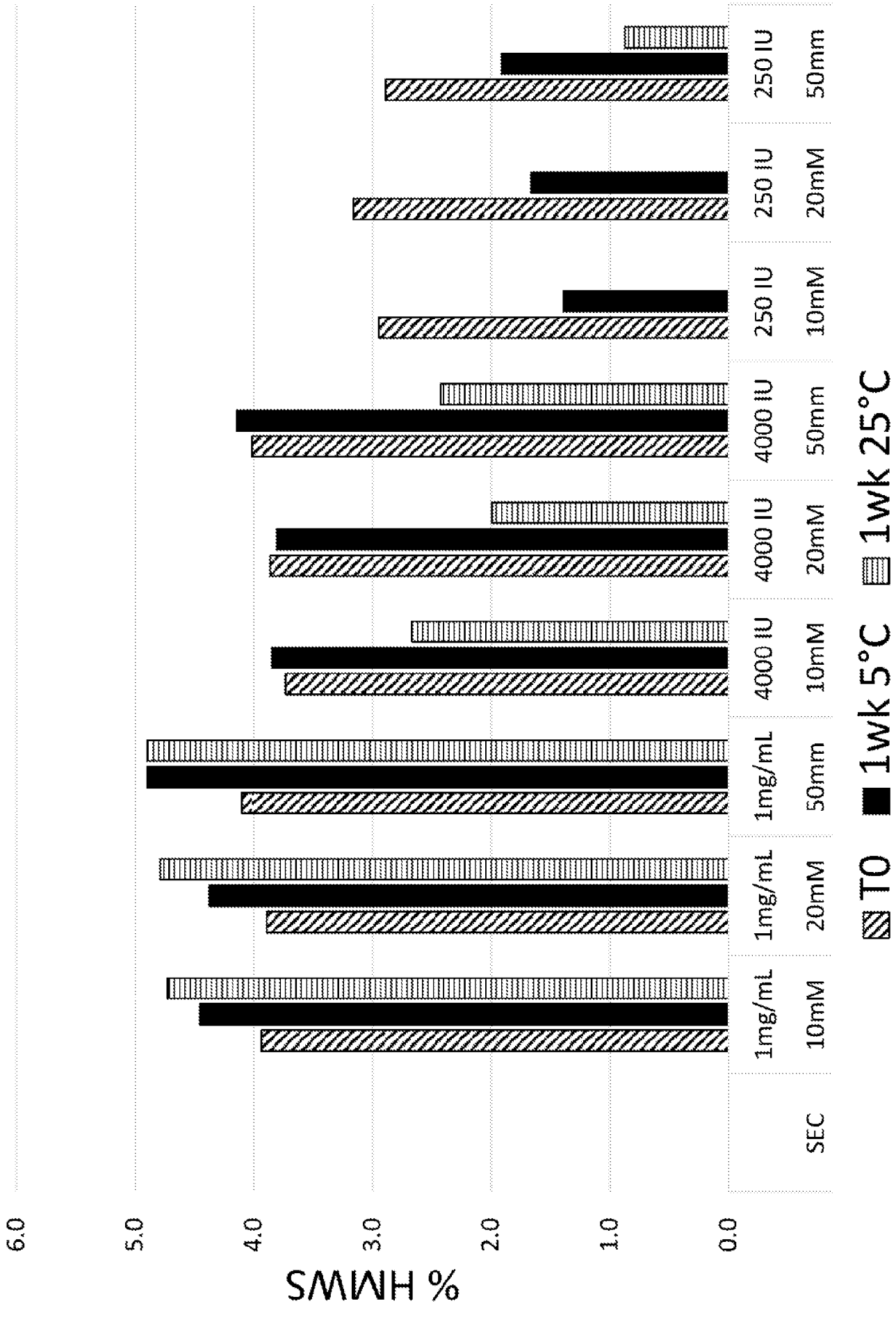

% HMWS
6.0
5.0
4.0
3.0
2.0
1.0
0.0
SEC
1mg/mL 10mM
1mg/mL 20mM
1mg/mL 50mm
4000 IU 10mM
4000 IU 20mM
4000 IU 50mm
250 IU 10mM
250 IU 20mM
250 IU 50mm
T0
1wk 5°C
1wk 25°C

FIG. 5

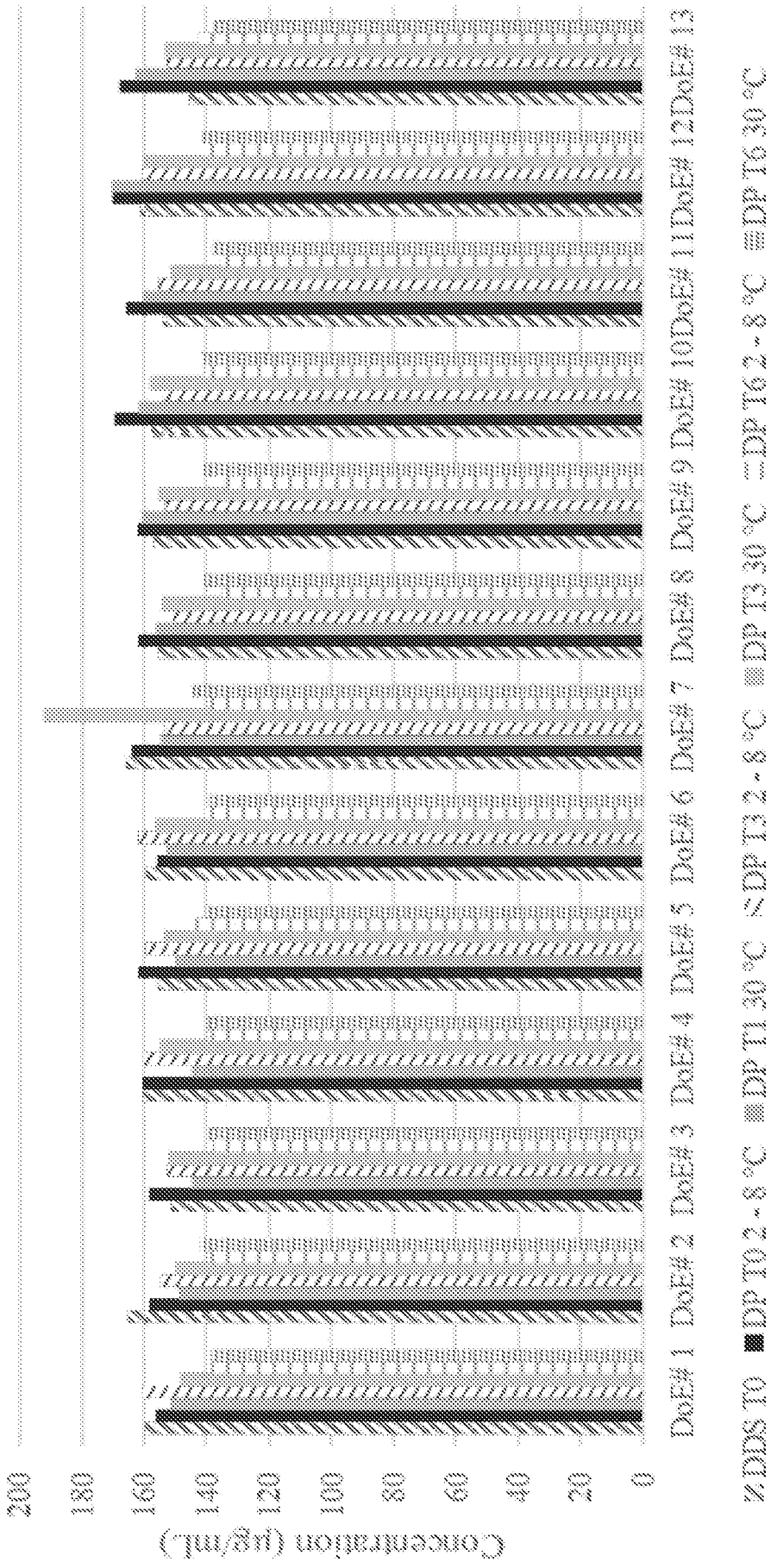

Concentration (μg/mL)
200
180
160
140
120
100
80
60
40
20
0
DoE# 1
DoE# 2
DoE# 3
DoE# 4
DoE# 5
DoE# 6
DoE# 7
DoE# 8
DoE# 9
DoE# 10
DoE# 11
DoE# 12
DoE# 13
%DDS T0
IDP T0 2 ~ 8 °C
IDP T1 30 °C
IDP T2 2 ~ 8 °C
IDP T3 30 °C
IDP T6 2 ~ 8 °C
IDP T6 30 °C

FIG. 6

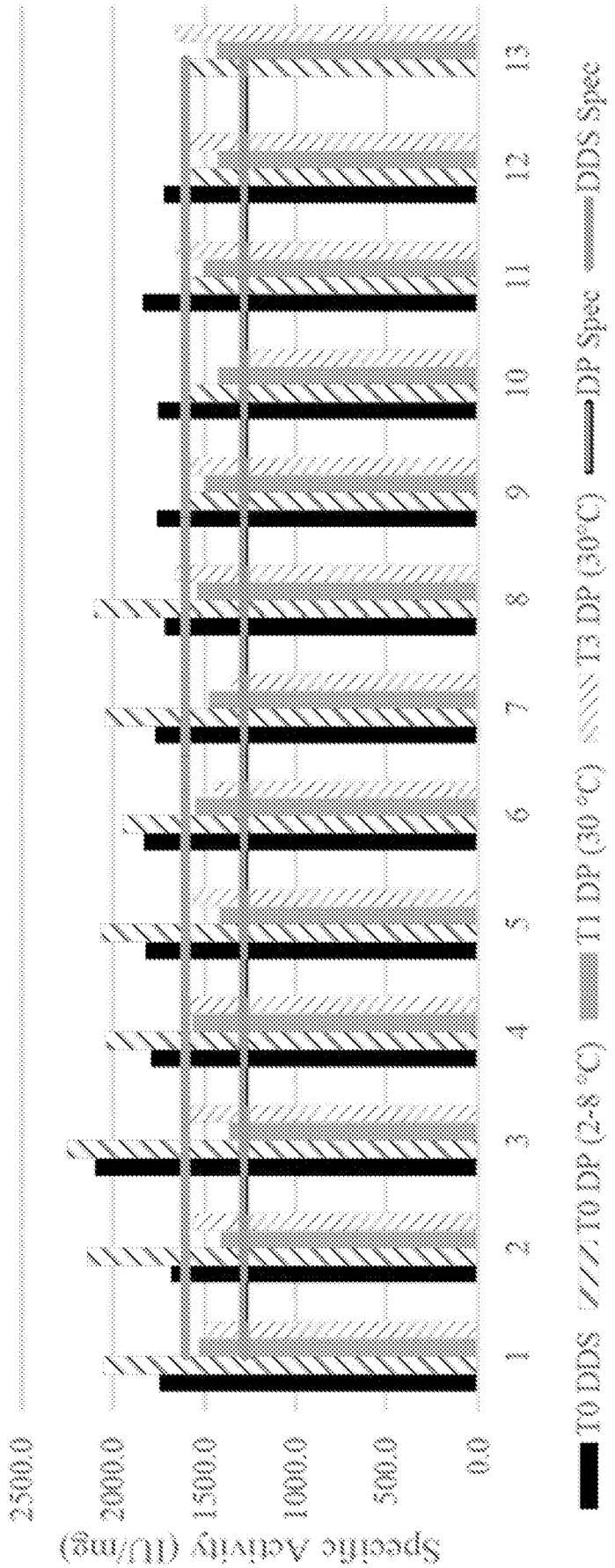

2500.0
2000.0
1500.0
1000.0
500.0
0.0
Specific Activity (IU/mg)
1
2
3
4
5
6
7
8
9
10
11
12
13
T0 DDS
T0 DP (2-8 °C)
T1 DP (30 °C)
T3 DP (30°C)
DP Spec
DDS Spec

FIG. 7

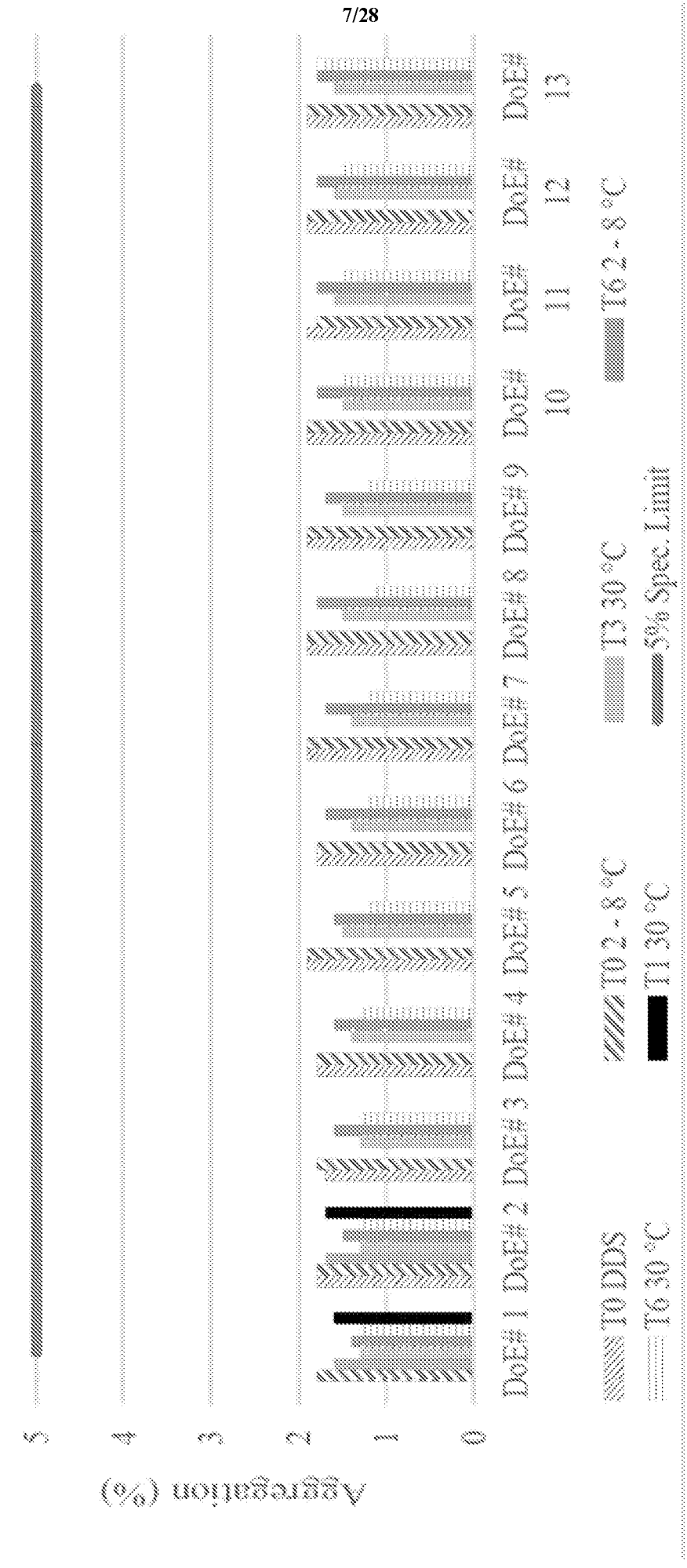

Aggregation (%)
0
1
2
3
4
5
DoE# 1
DoE# 2
DoE# 3
DoE# 4
DoE# 5
DoE# 6
DoE# 7
DoE# 8
DoE# 9
DoE# 10
DoE# 11
DoE# 12
DoE# 13
T0 DDS
T0 2 - 8 °C
T3 30 °C
T6 2 - 8 °C
T6 30 °C
T1 30 °C
5% Spec. Limit

FIG. 8

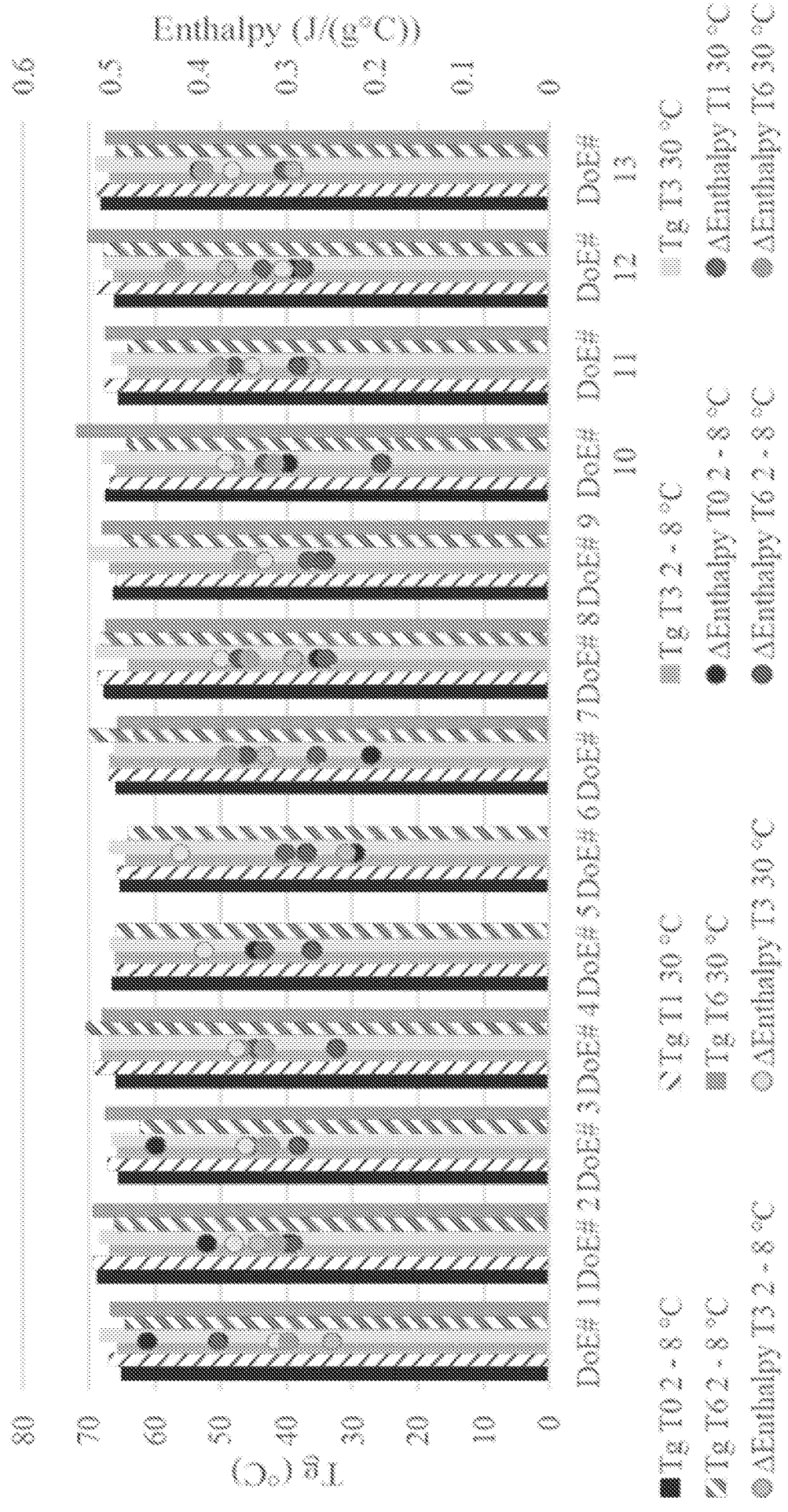

Enthalpy (J/(g°C))
0.6
0.5
0.4
0.3
0.2
0.1
0
Tg (°C)
80
70
60
50
40
30
20
10
0
DoE# 1 DoE# 2 DoE# 3 DoE# 4 DoE# 5 DoE# 6 DoE# 7 DoE# 8 DoE# 9 DoE# 10 DoE# 11 DoE# 12 DoE# 13
Tg T0 2 - 8 °C
Tg T1 30 °C
Tg T3 2 - 8 °C
Tg T3 30 °C
Tg T6 2 - 8 °C
Tg T6 30 °C
ΔEnthalpy T0 2 - 8 °C
ΔEnthalpy T1 30 °C
ΔEnthalpy T3 2 - 8 °C
ΔEnthalpy T3 30 °C
ΔEnthalpy T6 2 - 8 °C
ΔEnthalpy T6 30 °C

FIG. 9

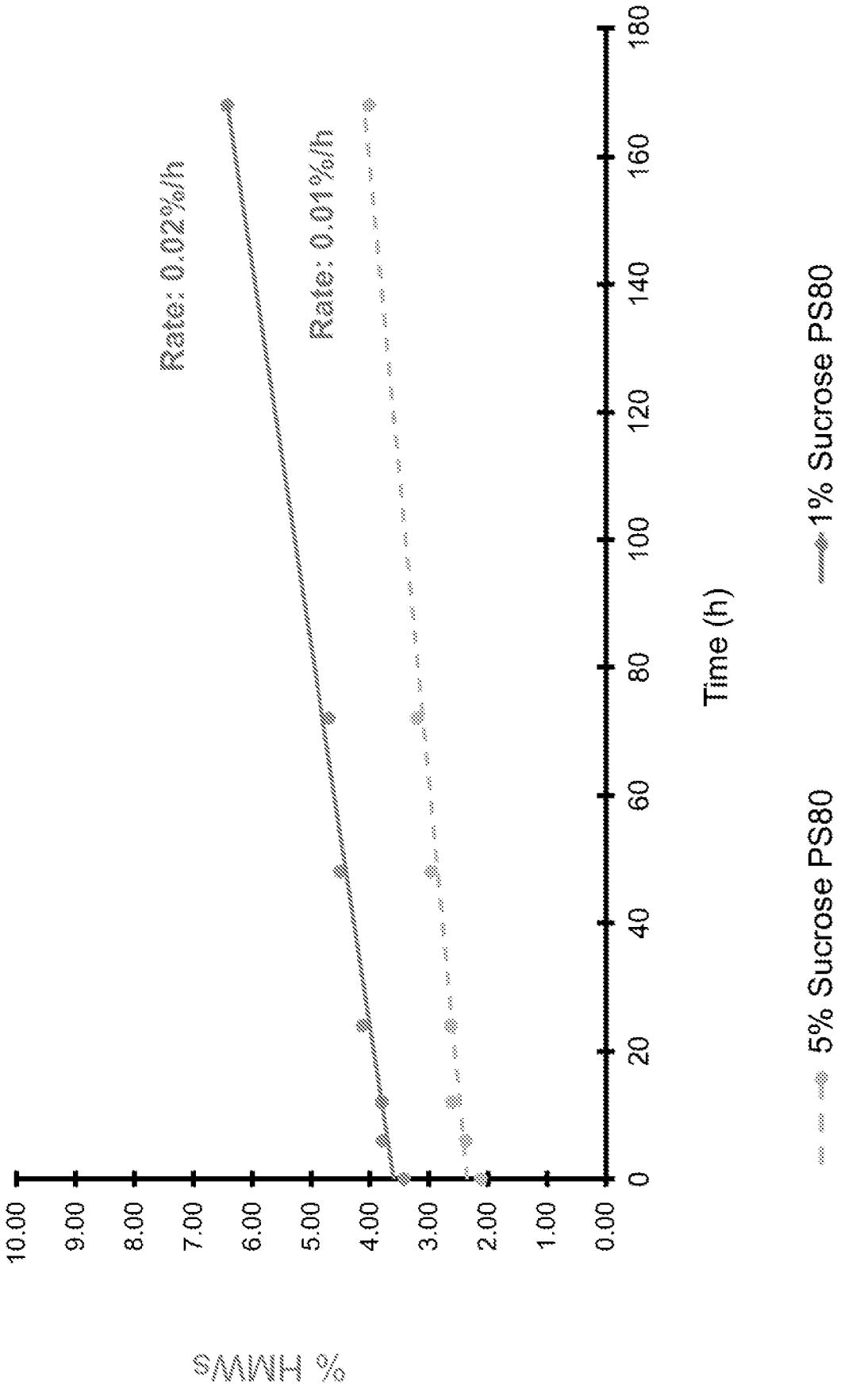

DS RT/RL
% HMWS
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
20
40
60
80
100
120
140
160
180
Time (h)
Rate: 0.02%/h
Rate: 0.01%/h
5% Sucrose PS80
1% Sucrose PS80

FIG. 10

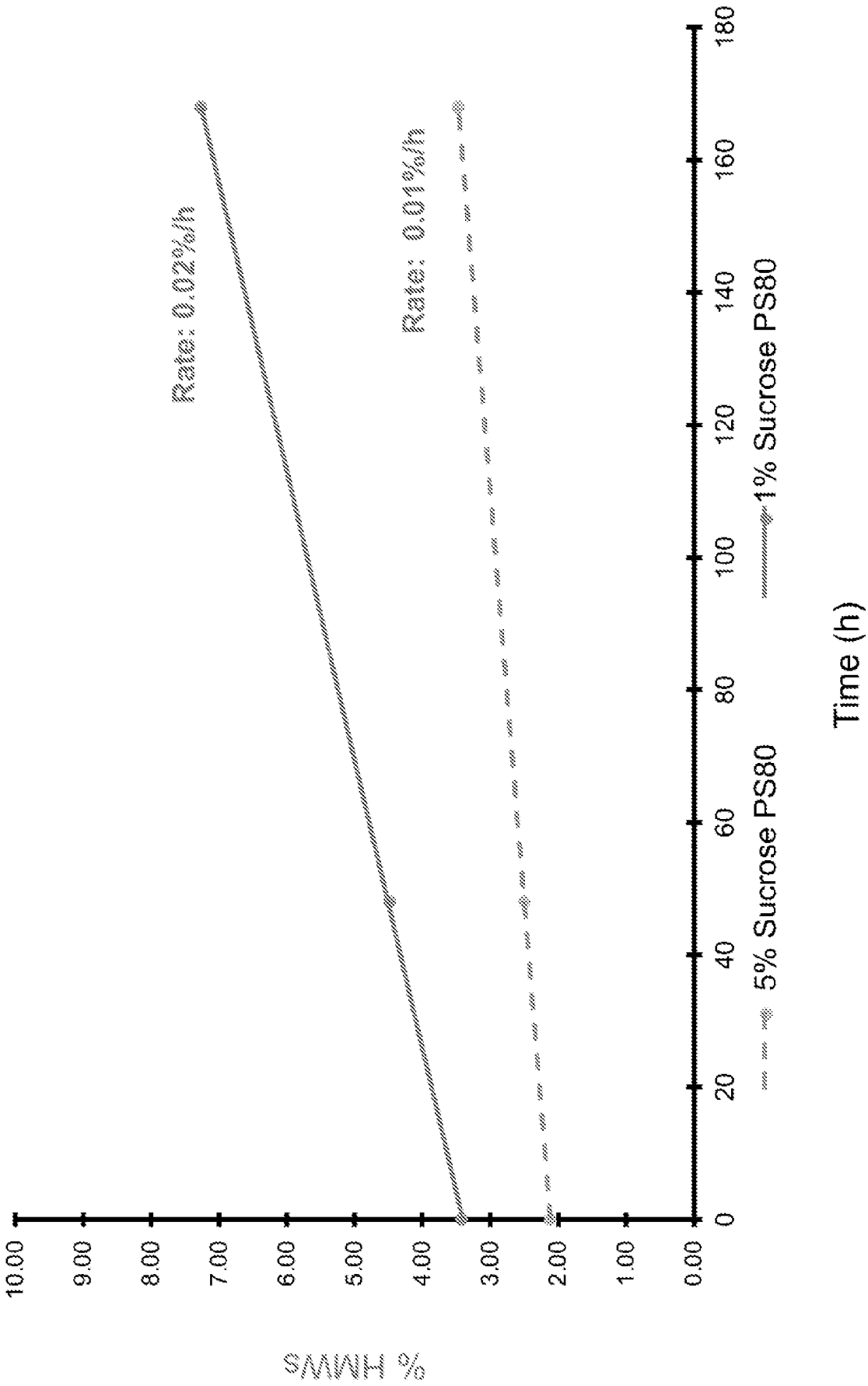

DS 2-8°C
Rate: 0.02%/h
Rate: 0.01%/h
% HMWS
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0
20
40
60
80
100
120
140
160
180
Time (h)
5% Sucrose PS80
1% Sucrose PS80

FIG. 11

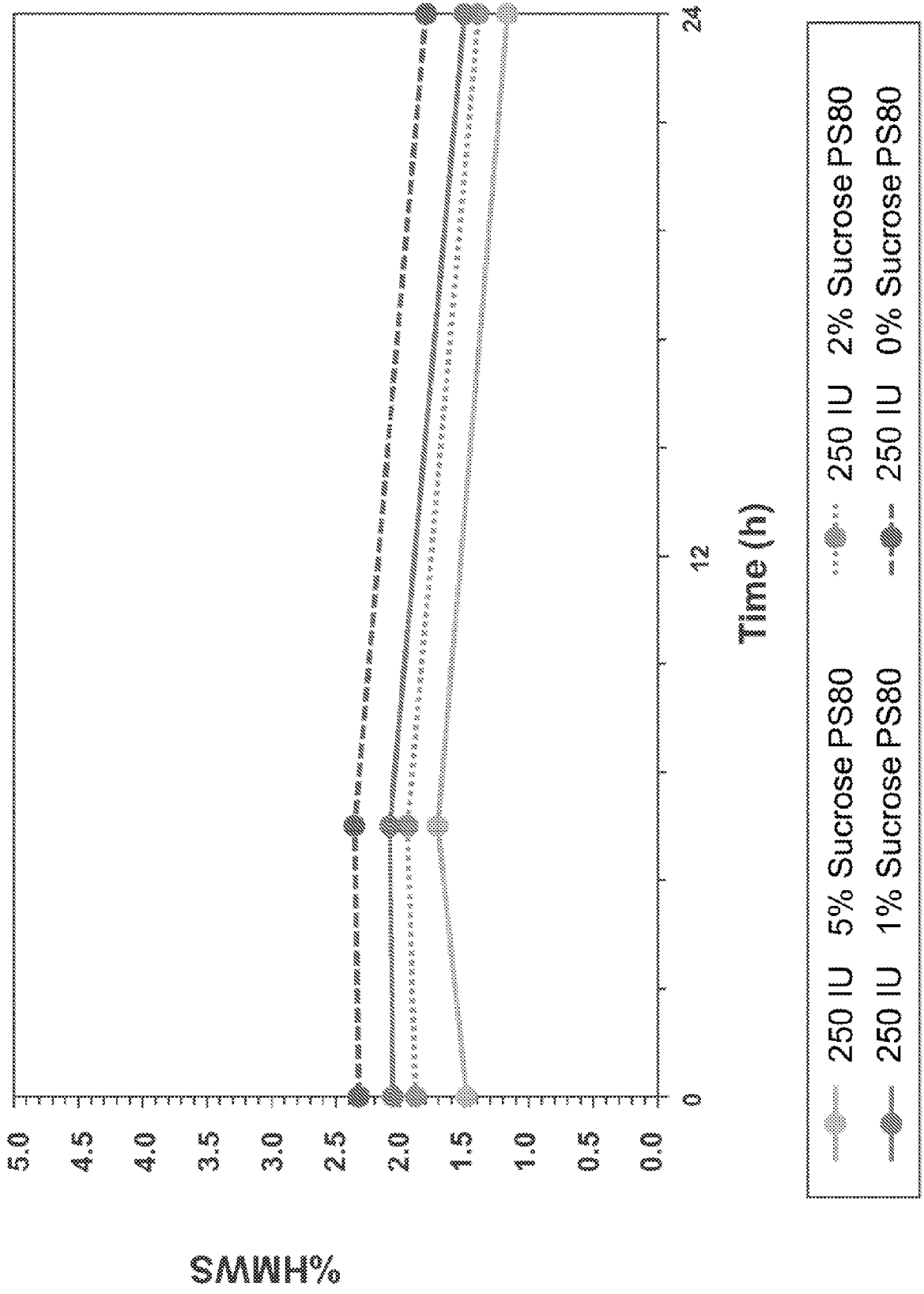

5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
SMWH%
0
12
24
Time (h)
250 IU 5% Sucrose PS80
250 IU 2% Sucrose PS80
250 IU 1% Sucrose PS80
250 IU 0% Sucrose PS80

FIG. 12

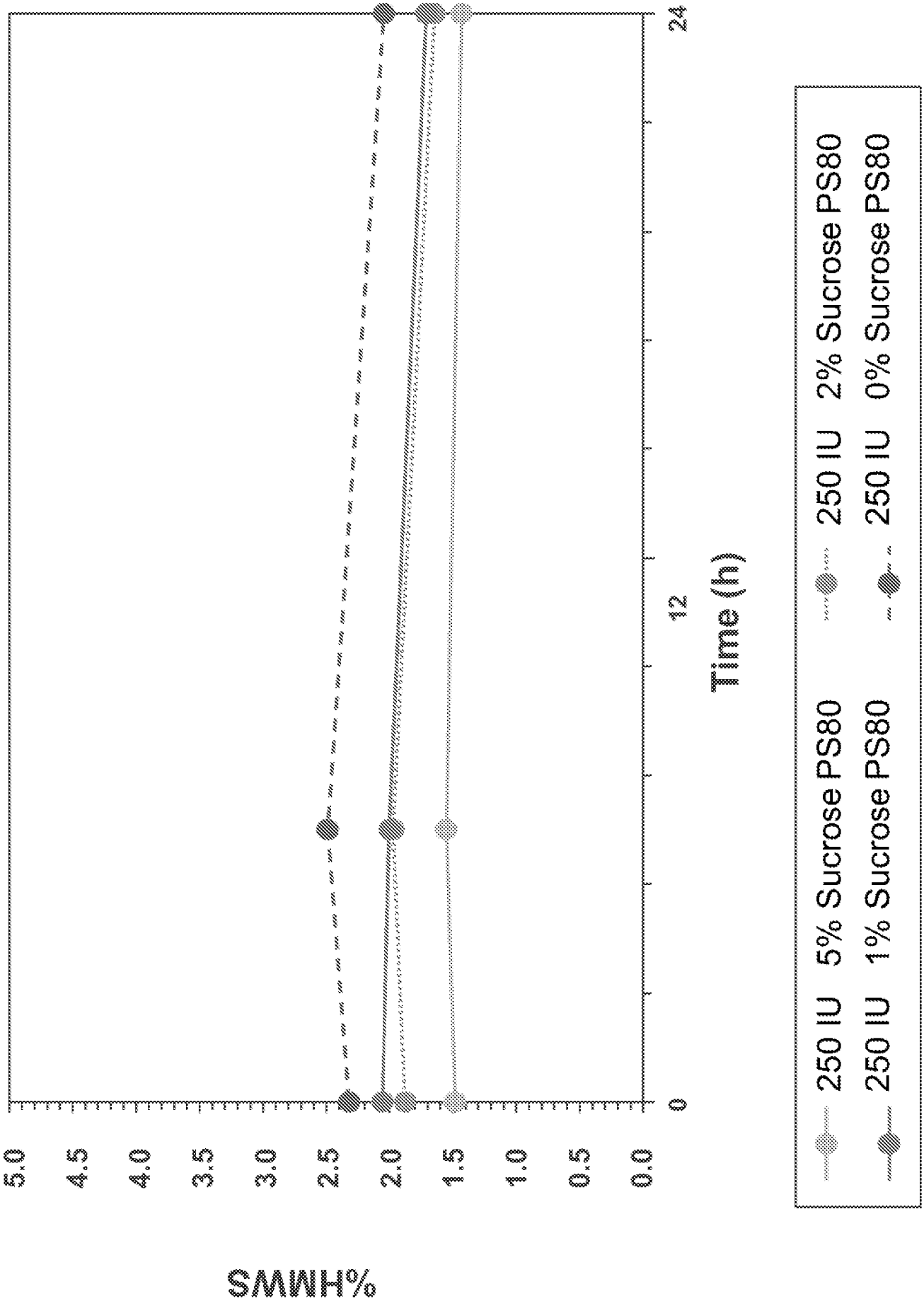

SMWH%
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
12
24
Time (h)
250 IU 5% Sucrose PS80
250 IU 2% Sucrose PS80
250 IU 1% Sucrose PS80
250 IU 0% Sucrose PS80

FIG. 13

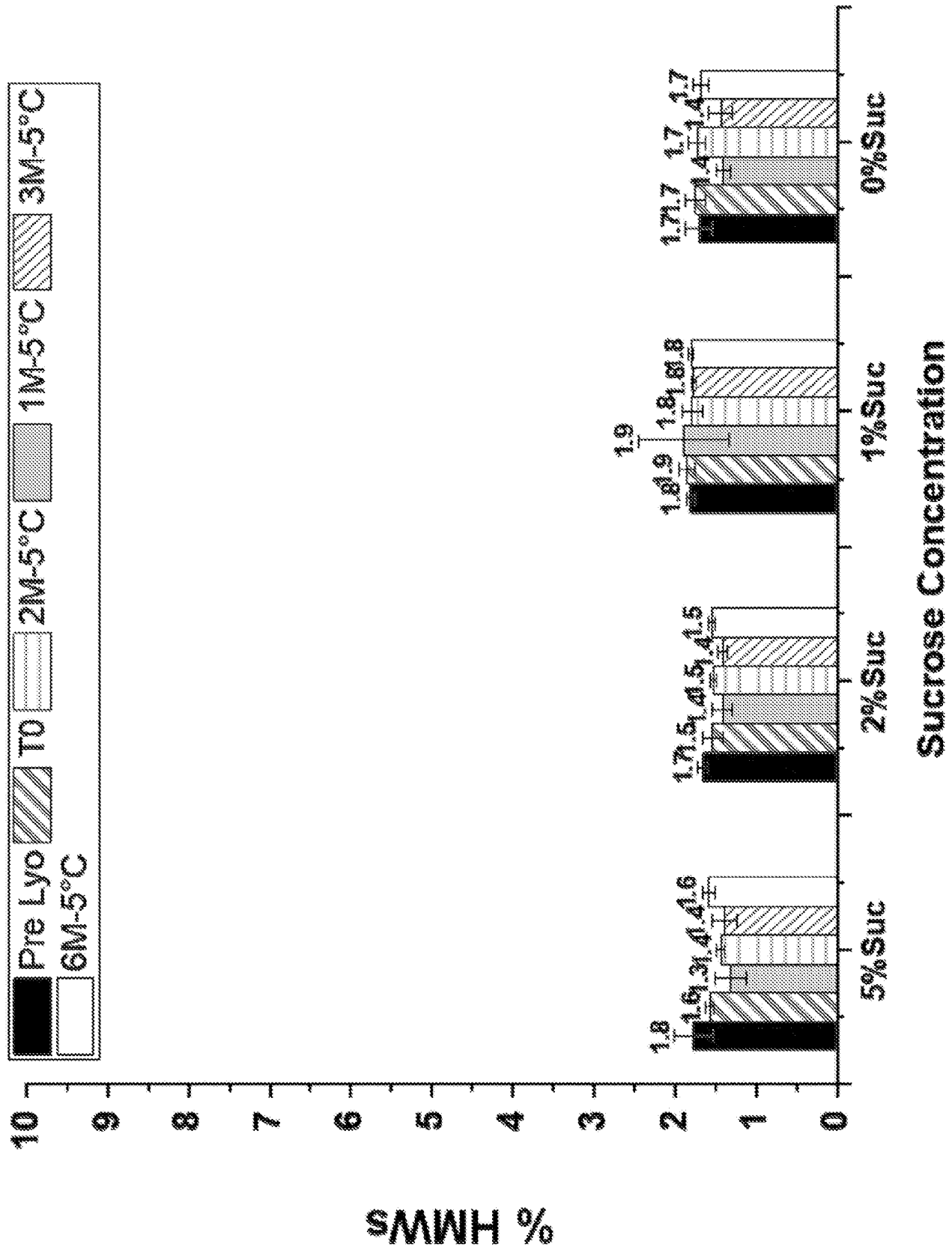

Pre Lyo
T0
2M-5°C
1M-5°C
3M-5°C
6M-5°C
% HMWS
10
9
8
7
6
5
4
3
2
1
0
1.8
1.6
1.3
1.4
1.4
1.6
1.7
1.5
1.4
1.5
1.4
1.5
1.8
1.9
1.9
1.8
1.8
1.8
1.7
1.7
1.4
1.7
1.4
1.7
5%Suc
2%Suc
1%Suc
0%Suc
Sucrose Concentration

FIG. 14

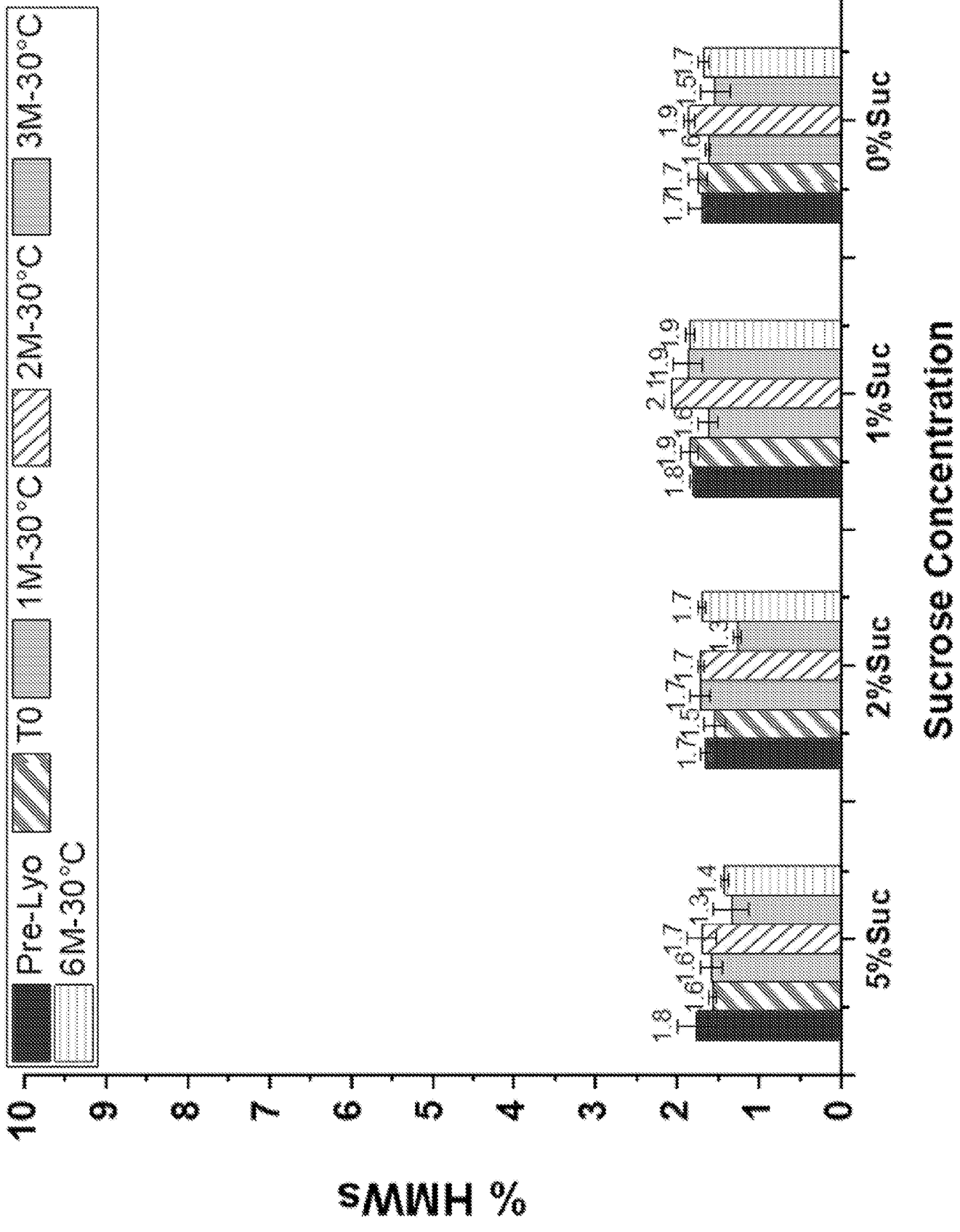

Pre-Lyo
T0
1M-30°C
2M-30°C
3M-30°C
6M-30°C
% HMWS
Sucrose Concentration
5%Suc
2%Suc
1%Suc
0%Suc

FIG. 15

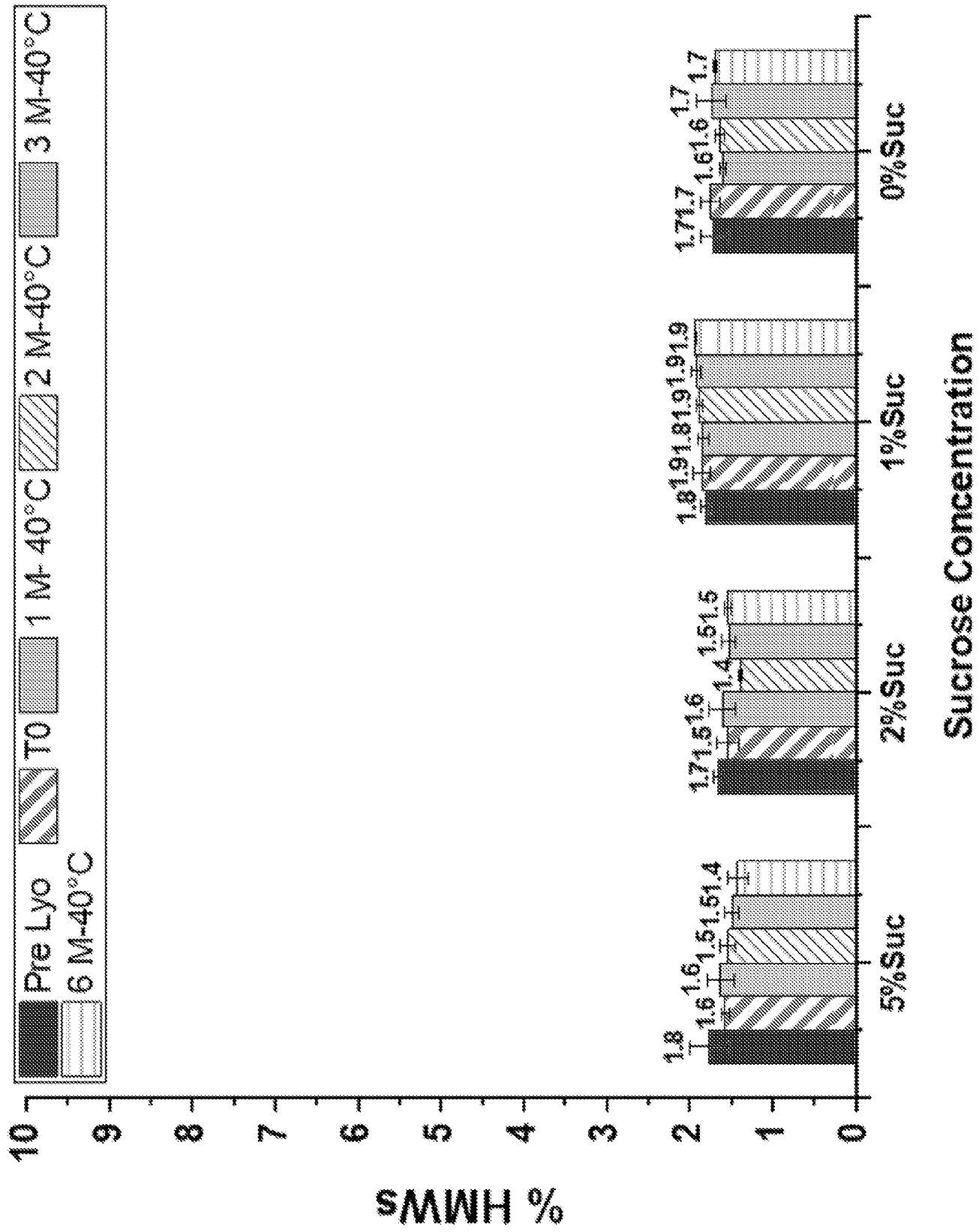

Pre Lyo
T0
1 M- 40°C
2 M-40°C
3 M-40°C
6 M-40°C
% HMWS
Sucrose Concentration
5%Suc
2%Suc
1%Suc
0%Suc
1.8
1.6
1.6
1.5
1.5
1.4
1.7
1.5
1.6
1.4
1.5
1.5
1.8
1.9
1.8
1.9
1.9
1.9
1.7
1.6
1.7
1.7

FIG. 16

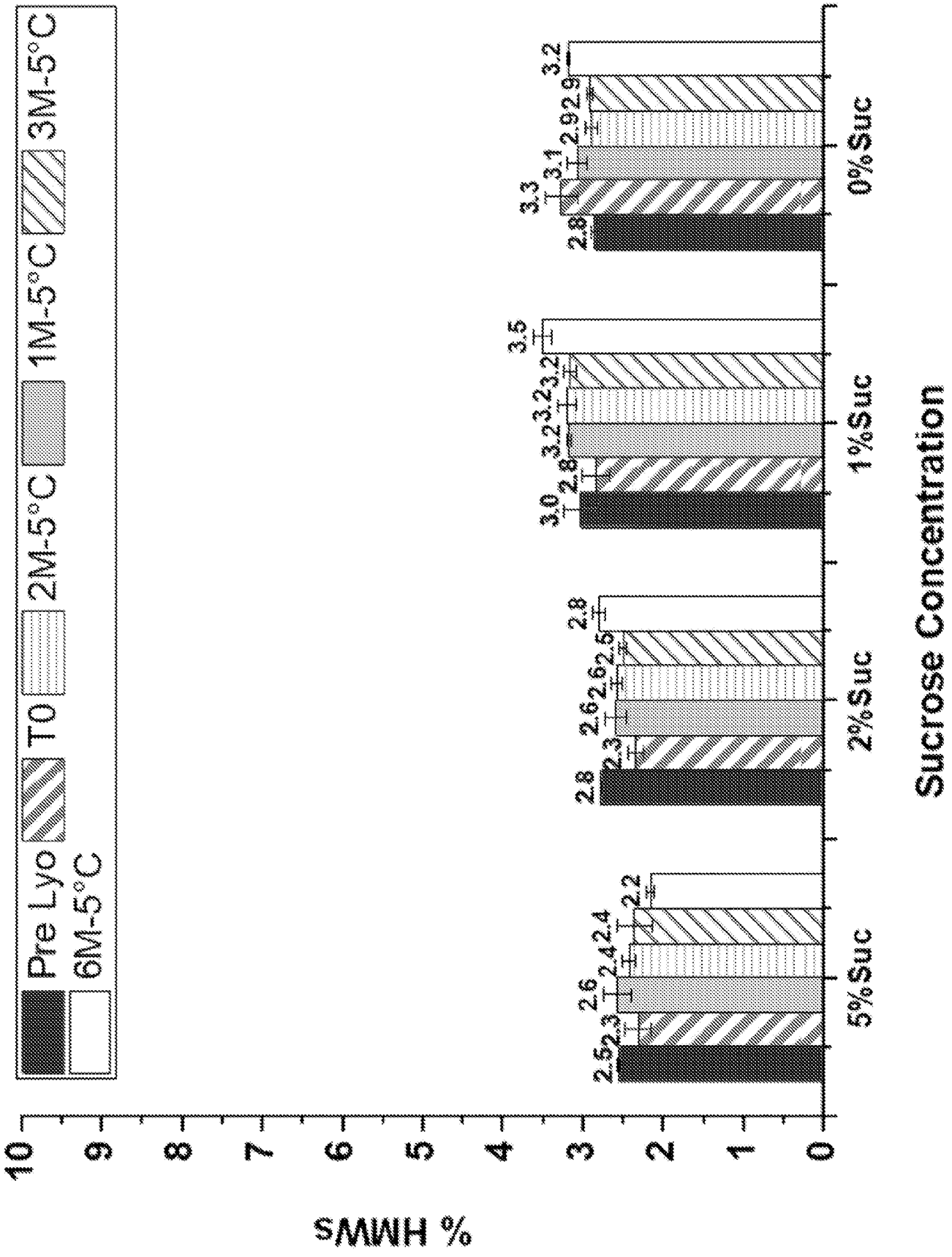

Pre Lyo
T0
2M-5°C
1M-5°C
3M-5°C
6M-5°C
% HMWS
10
9
8
7
6
5
4
3
2
1
0
2.5
2.3
2.6
2.4
2.4
2.2
5% Suc
2.8
2.3
2.6
2.6
2.5
2.8
2% Suc
3.0
2.8
3.2
3.2
3.2
3.5
1% Suc
2.8
3.3
3.1
2.9
2.9
3.2
0% Suc
Sucrose Concentration

FIG. 17

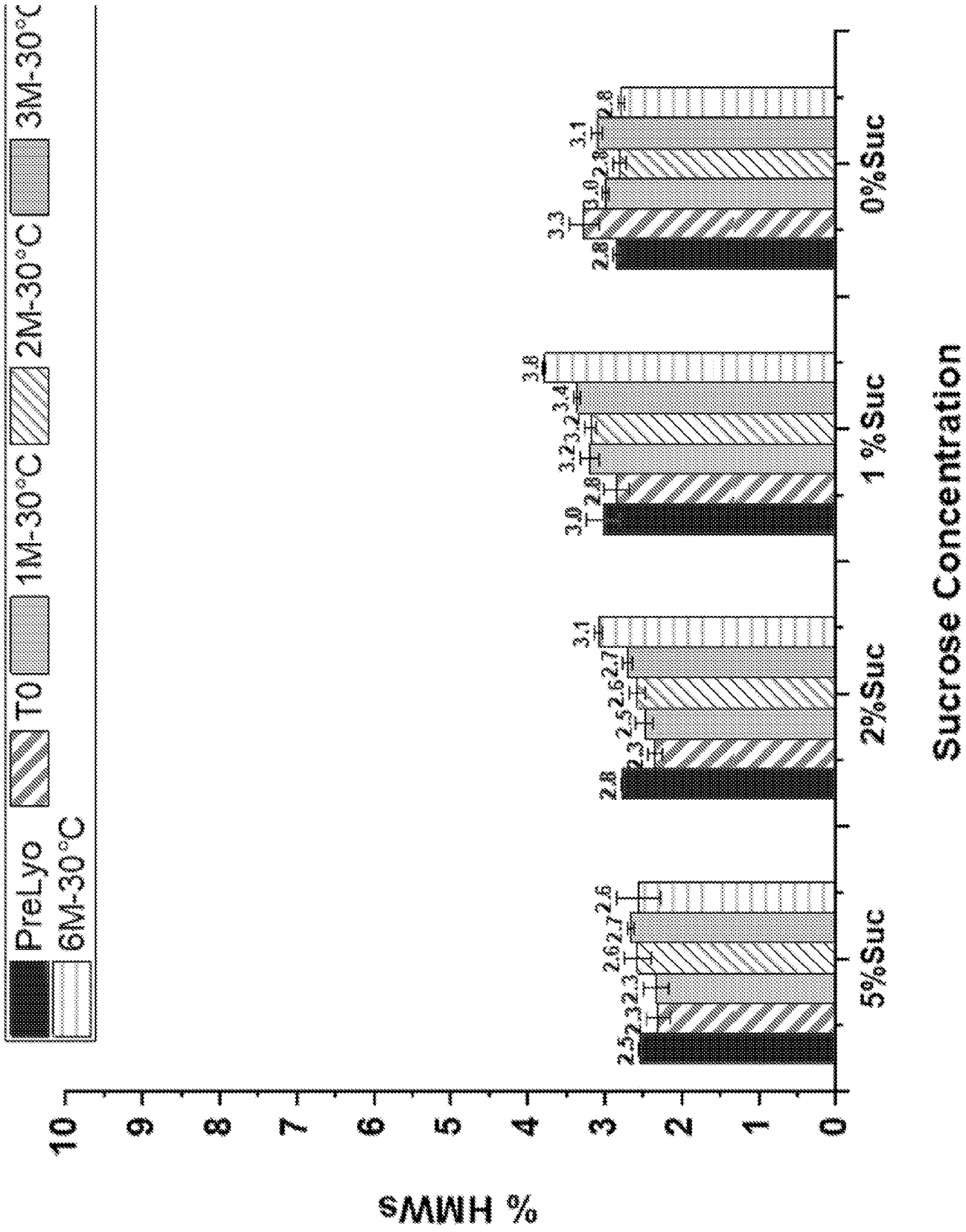

PreLyo
T0
1M-30°C
2M-30°C
3M-30°C
6M-30°C
% HMWS
Sucrose Concentration
5%Suc
2%Suc
1 %Suc
0%Suc

FIG. 18

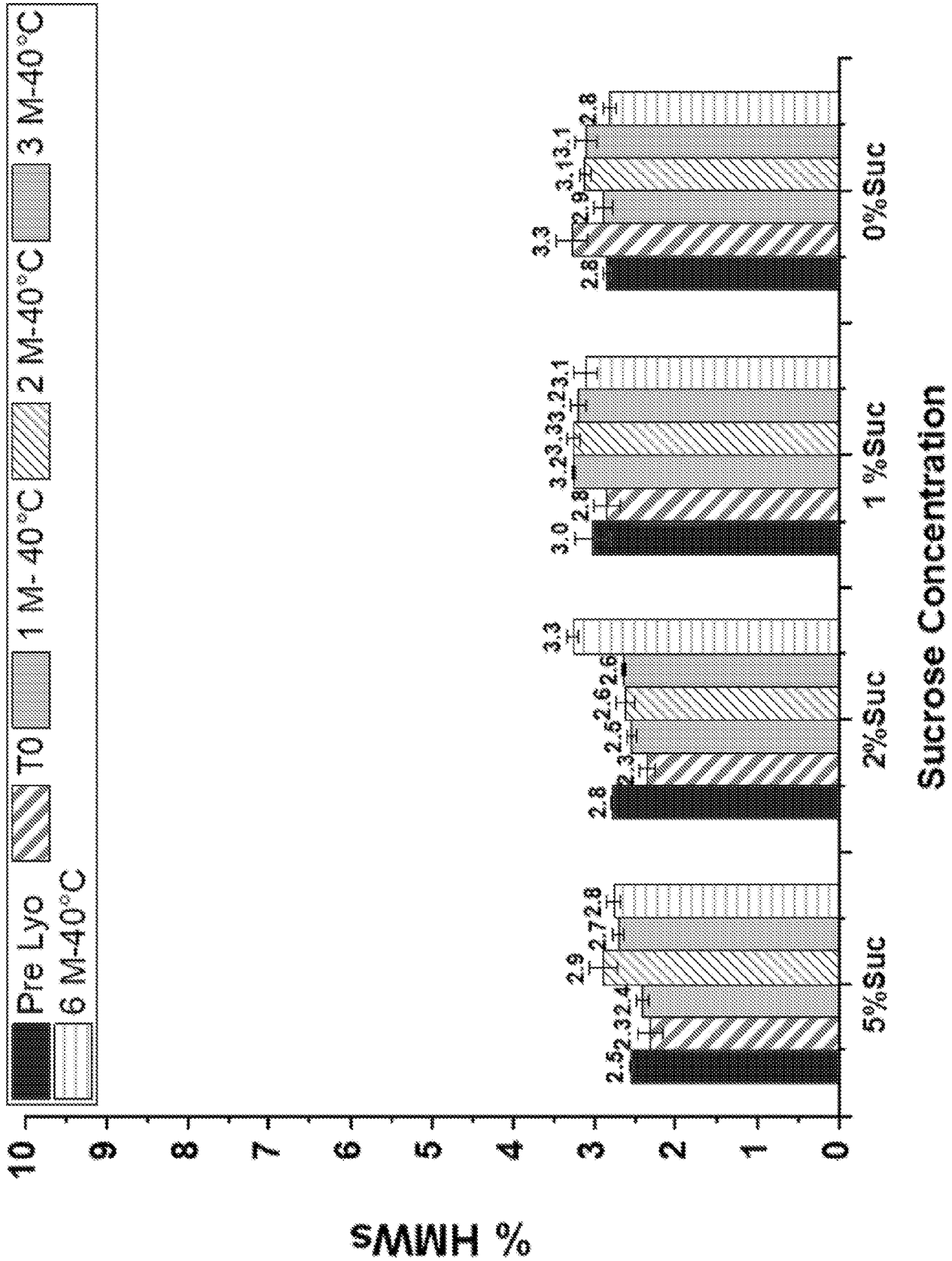

Pre Lyo
T0
1 M- 40°C
2 M-40°C
3 M-40°C
6 M-40°C
% HMWS
Sucrose Concentration
5%Suc
2%Suc
1 %Suc
0%Suc

FIG. 19

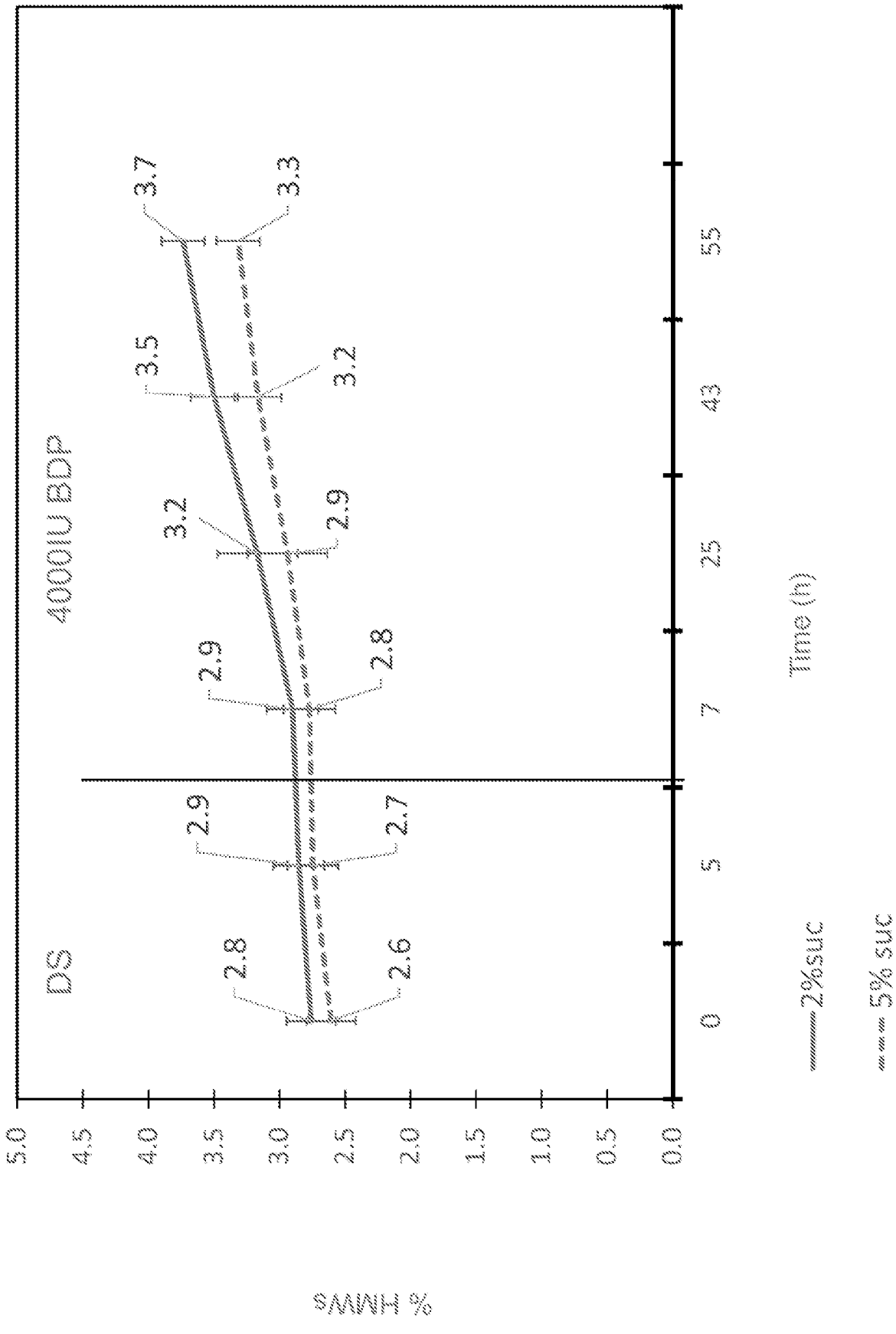

DS
4000IU BDP
3.7
3.3
3.5
3.2
3.2
2.9
2.9
2.8
2.9
2.7
2.8
2.6
% HMWS
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0
5
7
25
43
55
Time (h)
2%suc
5% suc

FIG. 20

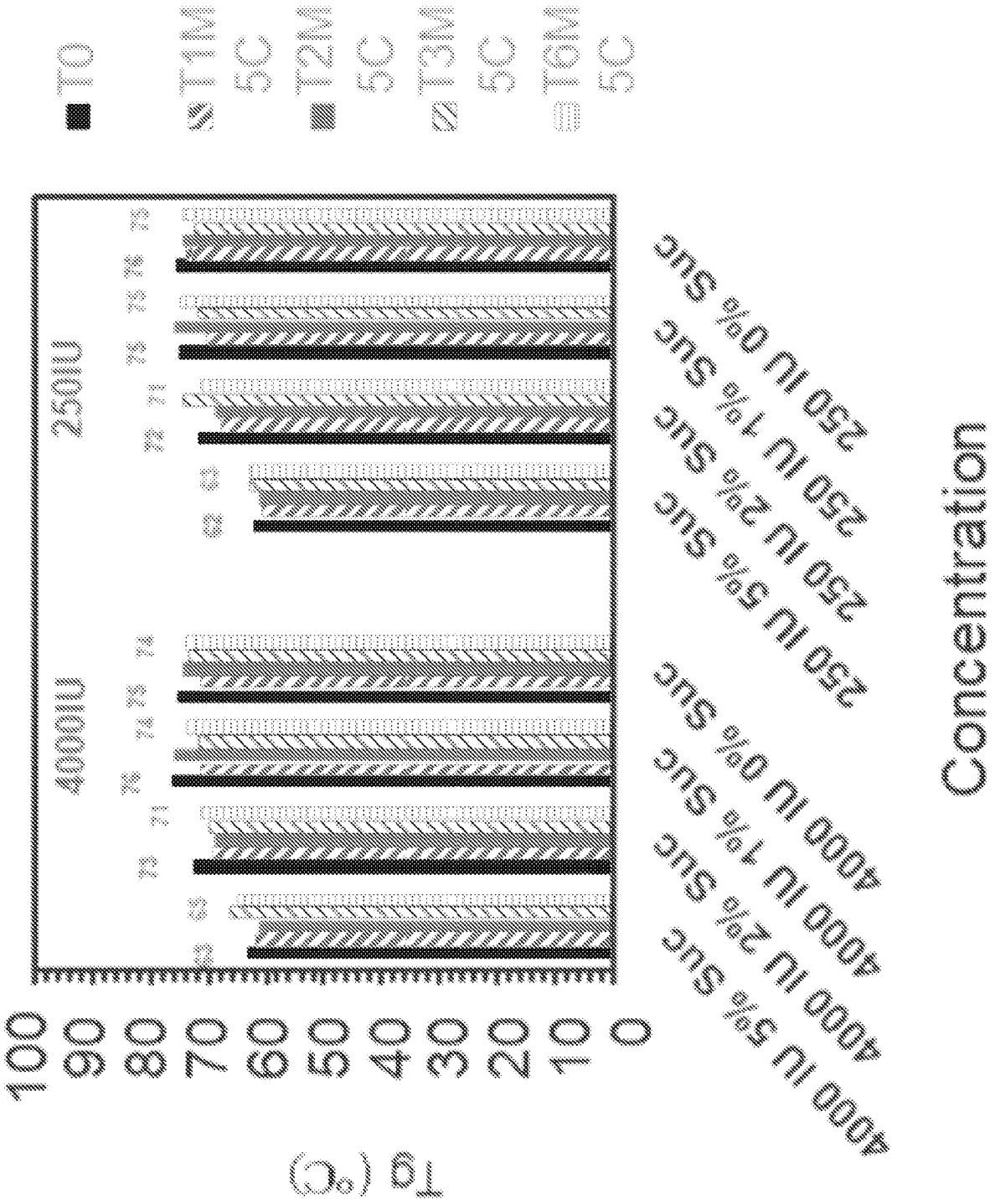

T0
T1M 5C
T2M 5C
T3M 5C
T6M 5C
250IU
400IU
Tg (°C)
100
90
80
70
60
50
40
30
20
10
0
400 IU 5% Suc
400 IU 2% Suc
400 IU 1% Suc
400 IU 0% Suc
250 IU 5% Suc
250 IU 2% Suc
250 IU 1% Suc
250 IU 0% Suc
Concentration

FIG. 21

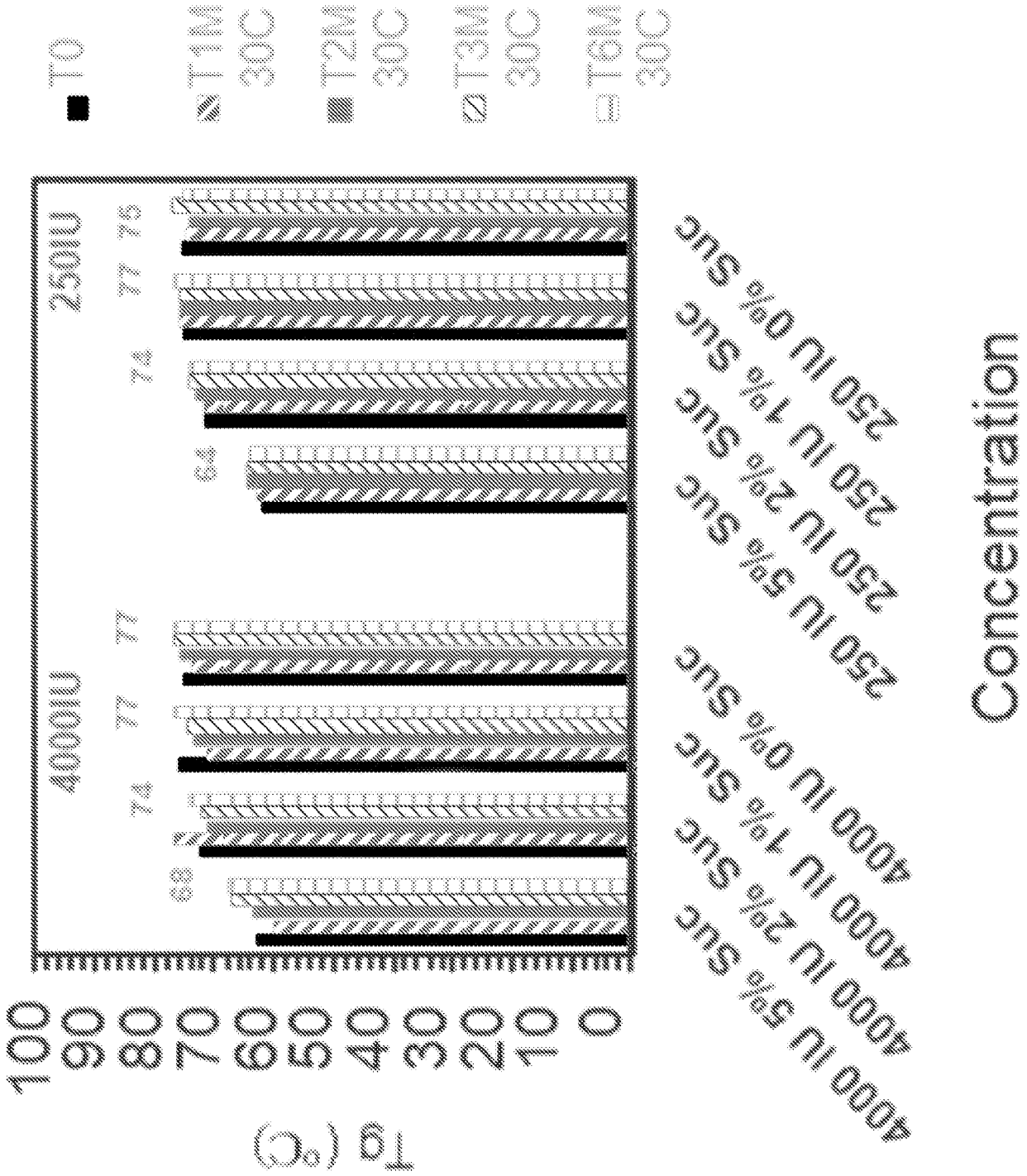

T0
T1M 30C
T2M 30C
T3M 30C
T6M 30C
250IU
400IU
75
77
74
64
77
77
74
68
250 IU 0% Suc
250 IU 1% Suc
250 IU 2% Suc
250 IU 5% Suc
400 IU 0% Suc
400 IU 1% Suc
400 IU 2% Suc
400 IU 5% Suc
Concentration
Tg (°C)
100
90
80
70
60
50
40
30
20
10
0

FIG. 22

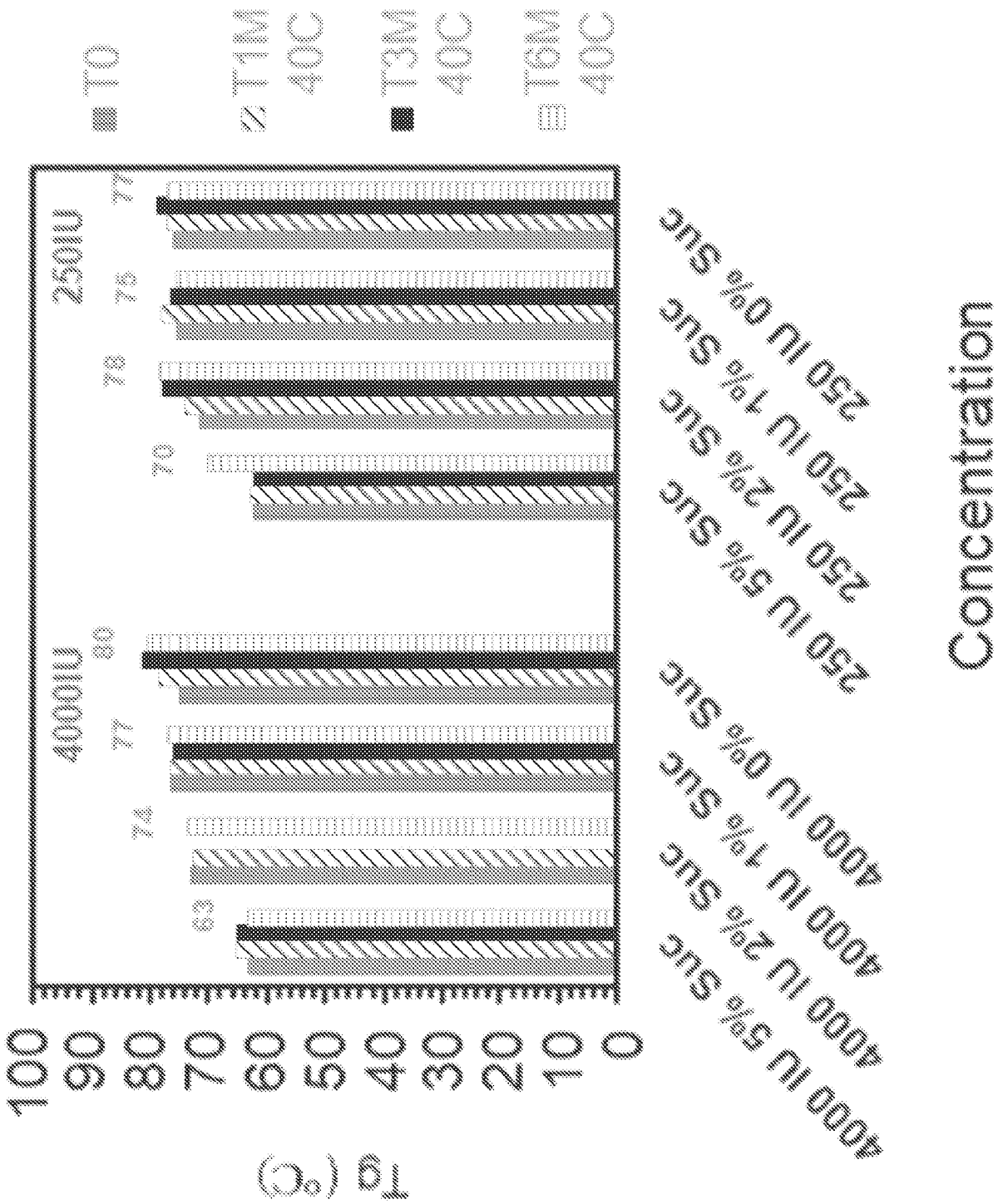

T0
T1M 40C
T3M 40C
T6M 40C
250IU
4000IU
77
76
78
70
80
77
74
63
100
90
80
70
60
50
40
30
20
10
0
Tg (°C)
250 IU 5% Suc
250 IU 2% Suc
250 IU 1% Suc
250 IU 0% Suc
4000 IU 5% Suc
4000 IU 2% Suc
4000 IU 1% Suc
4000 IU 0% Suc
Concentration

FIG. 23

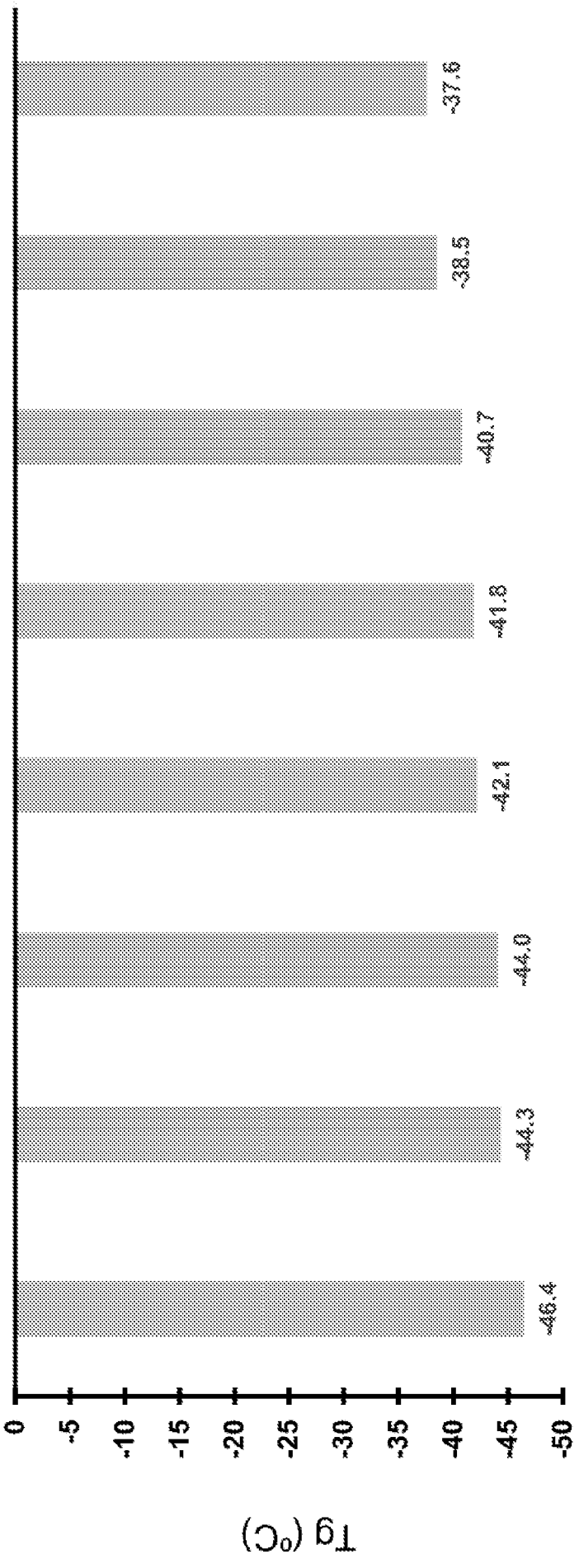

Tg (°C)
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
PS80 0% SUC-250IU
PS80 0% SUC-4000IU
PS80 1% SUC-250IU
PS80 1% SUC-4000IU
PS80 2% SUC-250IU
PS80 2% SUC-4000IU
PS80 5% SUC-250IU
PS80 5% SUC-4000IU
-46.4
-44.3
-44.0
-42.1
-41.8
-40.7
-38.5
-37.6

FIG. 24

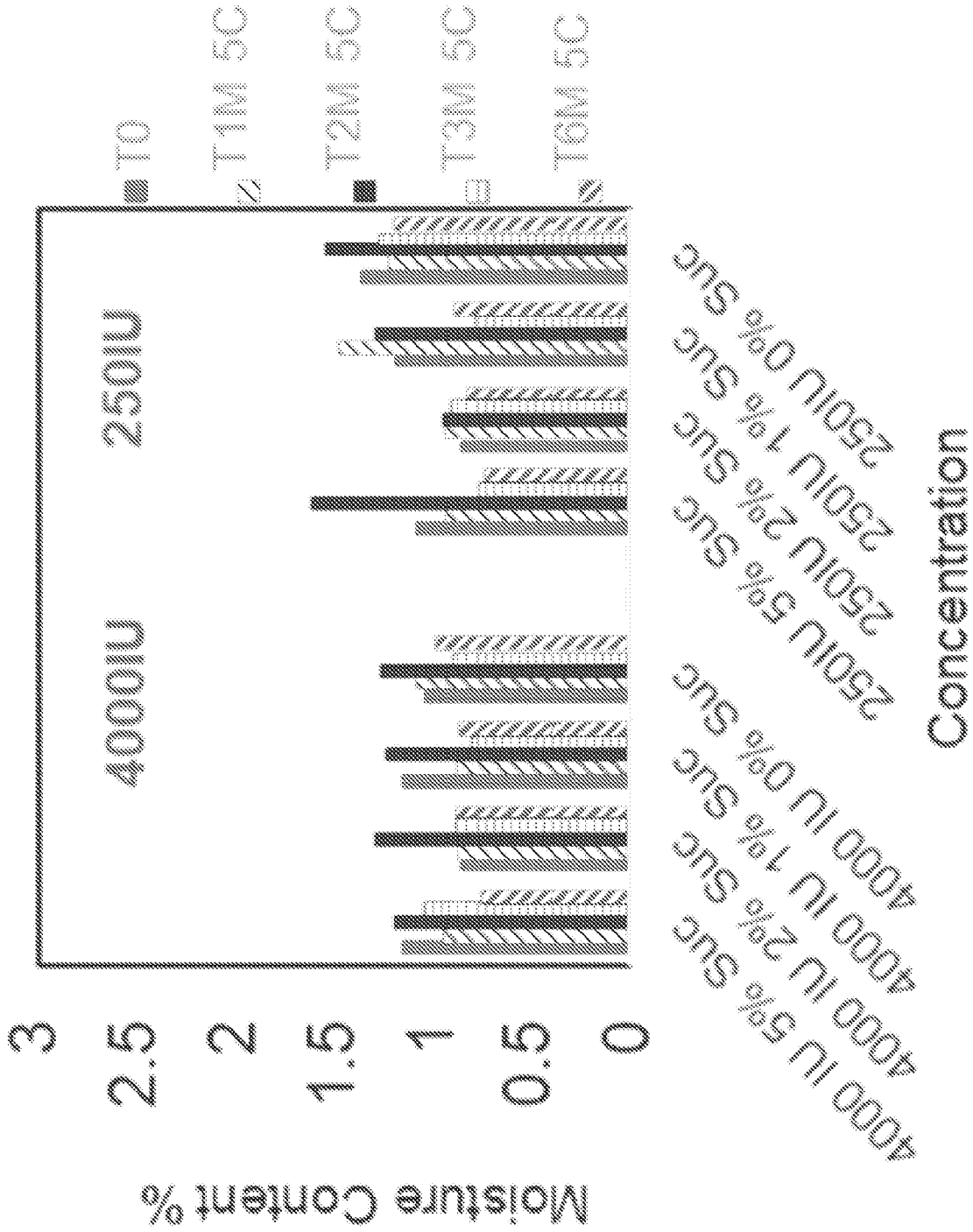

T0
T1M 5C
T2M 5C
T3M 5C
T6M 5C
250IU
4000IU
3
2.5
2
1.5
1
0.5
0
Moisture Content %
250IU 0% SNS
250IU 1% SNS
250IU 2% SNS
250IU 5% SNS
4000IU 0% SNS
4000IU 1% SNS
4000IU 2% SNS
4000IU 5% SNS
Concentration

FIG. 25

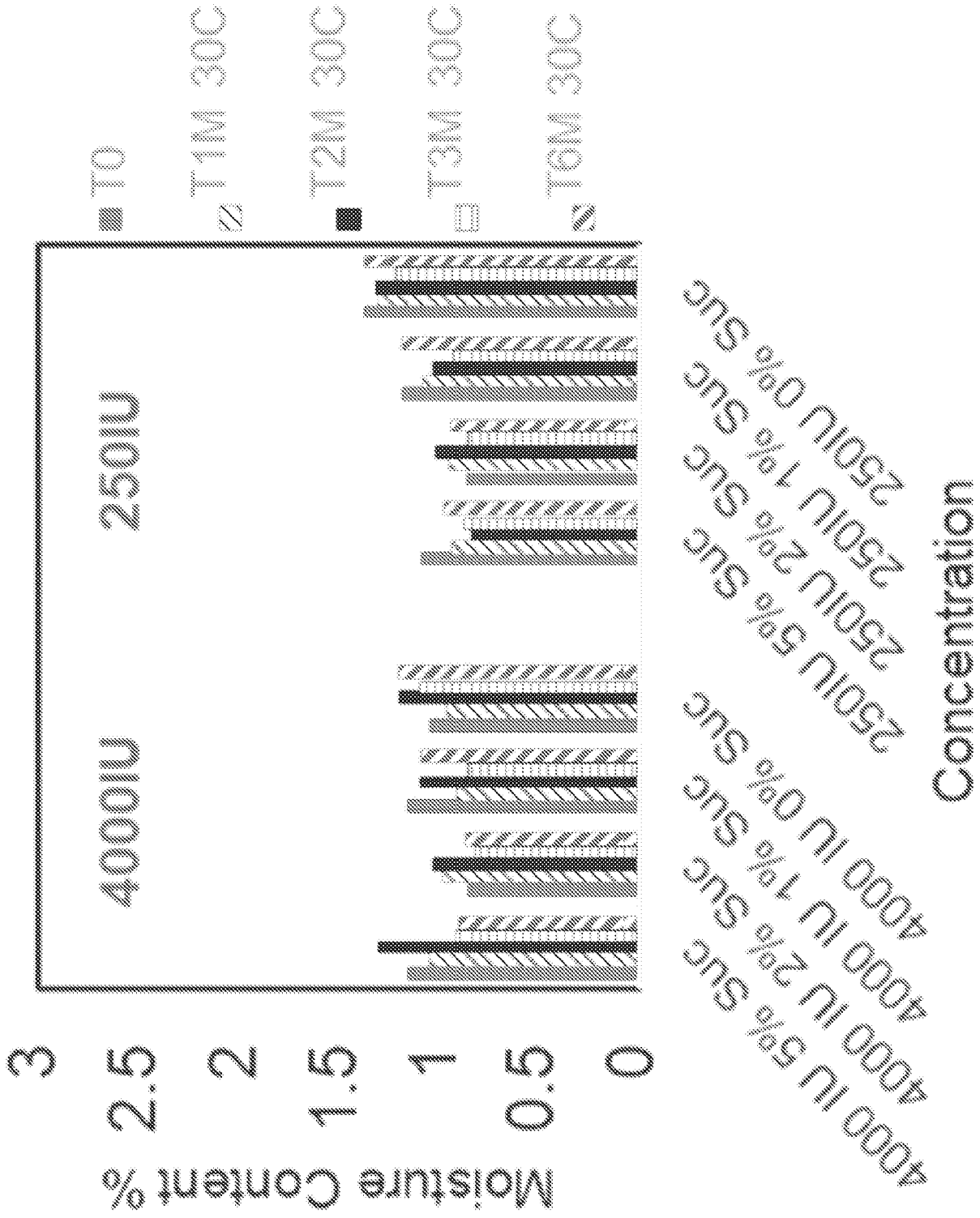

T0
T1M 30C
T2M 30C
T3M 30C
T6M 30C
4000IU
250IU
Moisture Content %
3
2.5
2
1.5
1
0.5
0
4000 IU 5% Suc
4000 IU 2% Suc
4000 IU 1% Suc
4000 IU 0% Suc
250IU 5% Suc
250IU 2% Suc
250IU 1% Suc
250IU 0% Suc
Concentration

FIG. 26

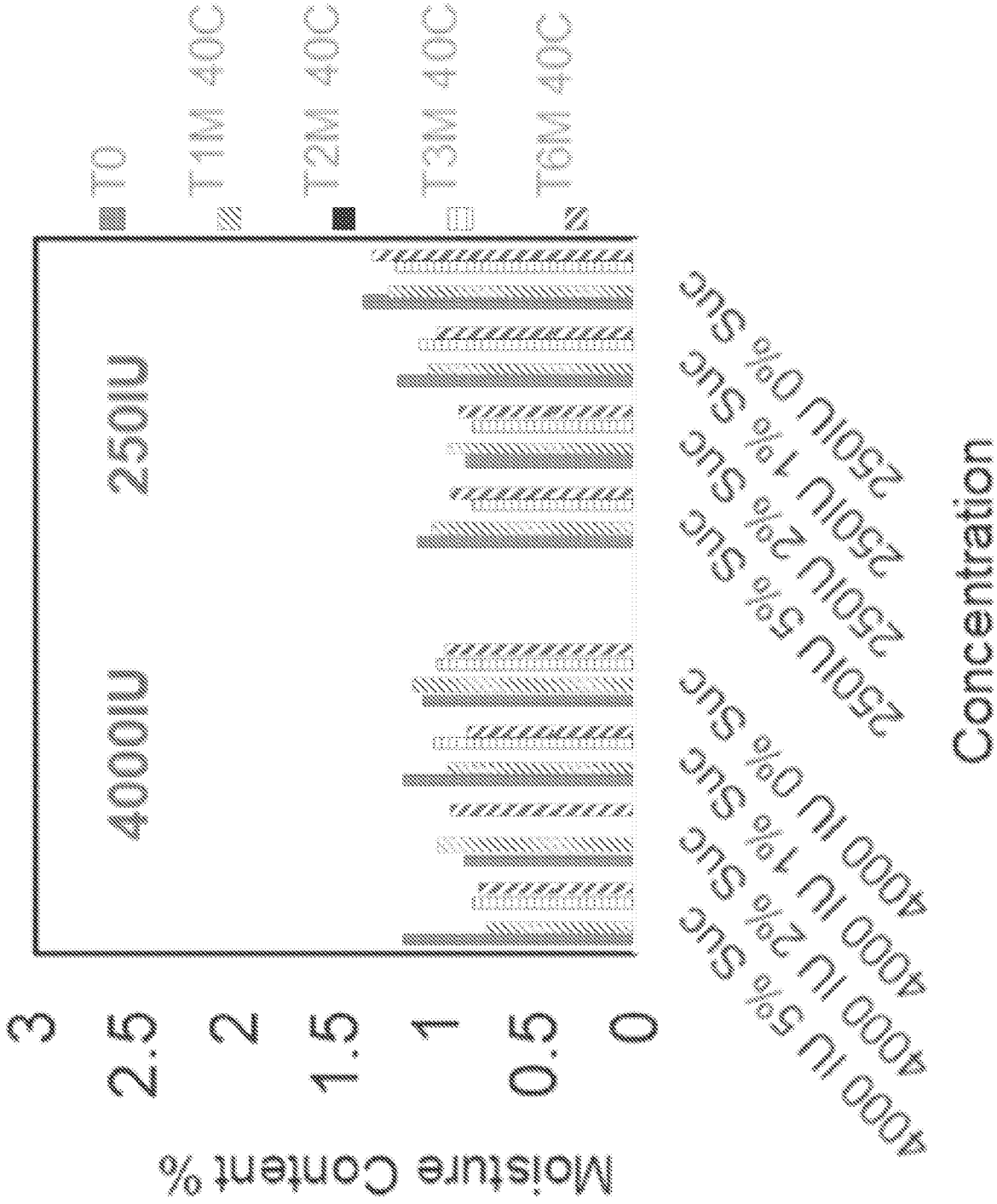

T0
T1M 40C
T2M 40C
T3M 40C
T6M 40C
4000IU
250IU
3
2.5
2
1.5
1
0.5
0
Moisture Content %
4000 IU 5% ZnS
4000 IU 2% ZnS
4000 IU 1% ZnS
4000 IU 0% ZnS
250IU 5% ZnS
250IU 2% ZnS
250IU 1% ZnS
250IU 0% ZnS
Concentration

FIG. 27

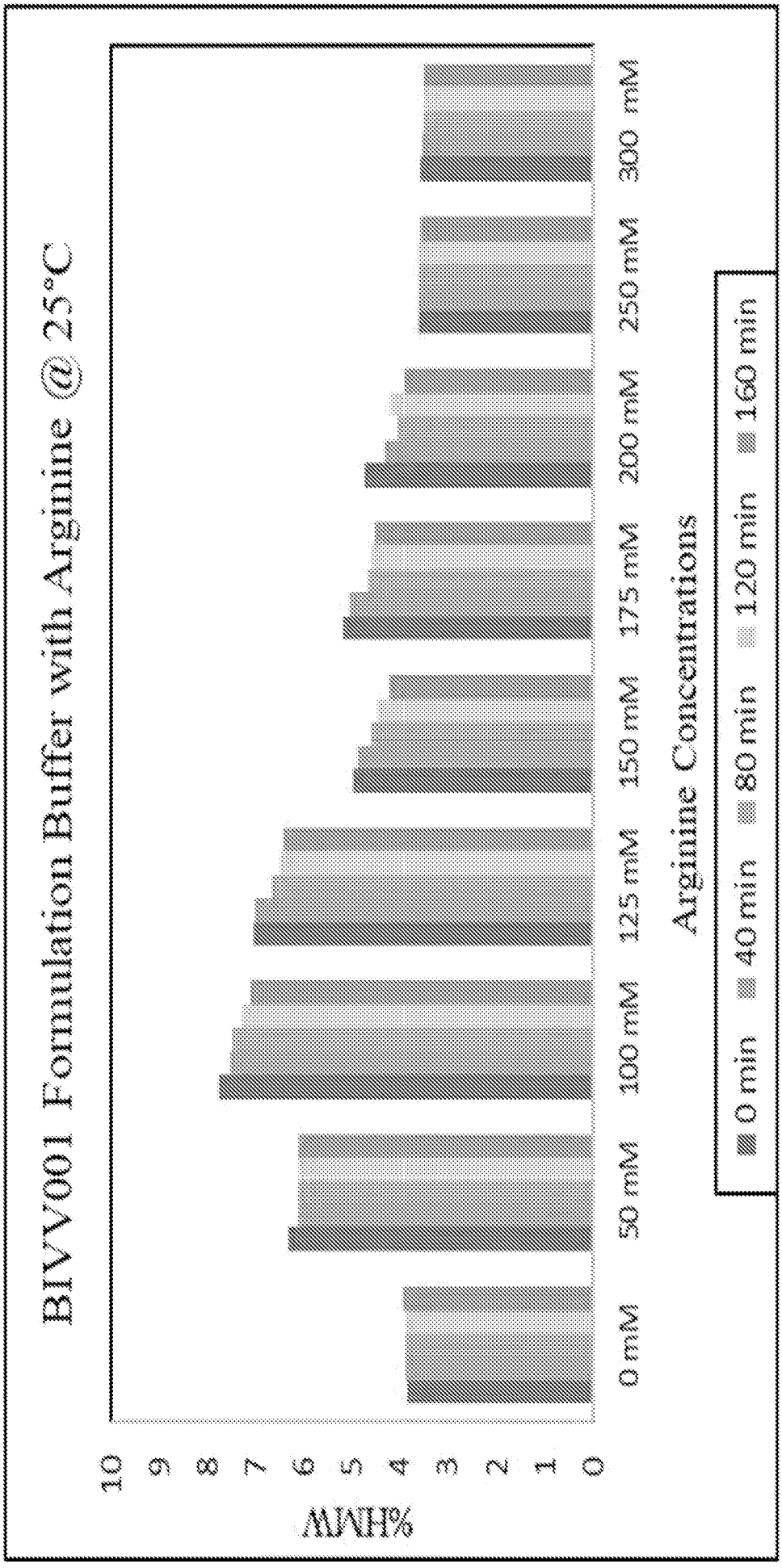
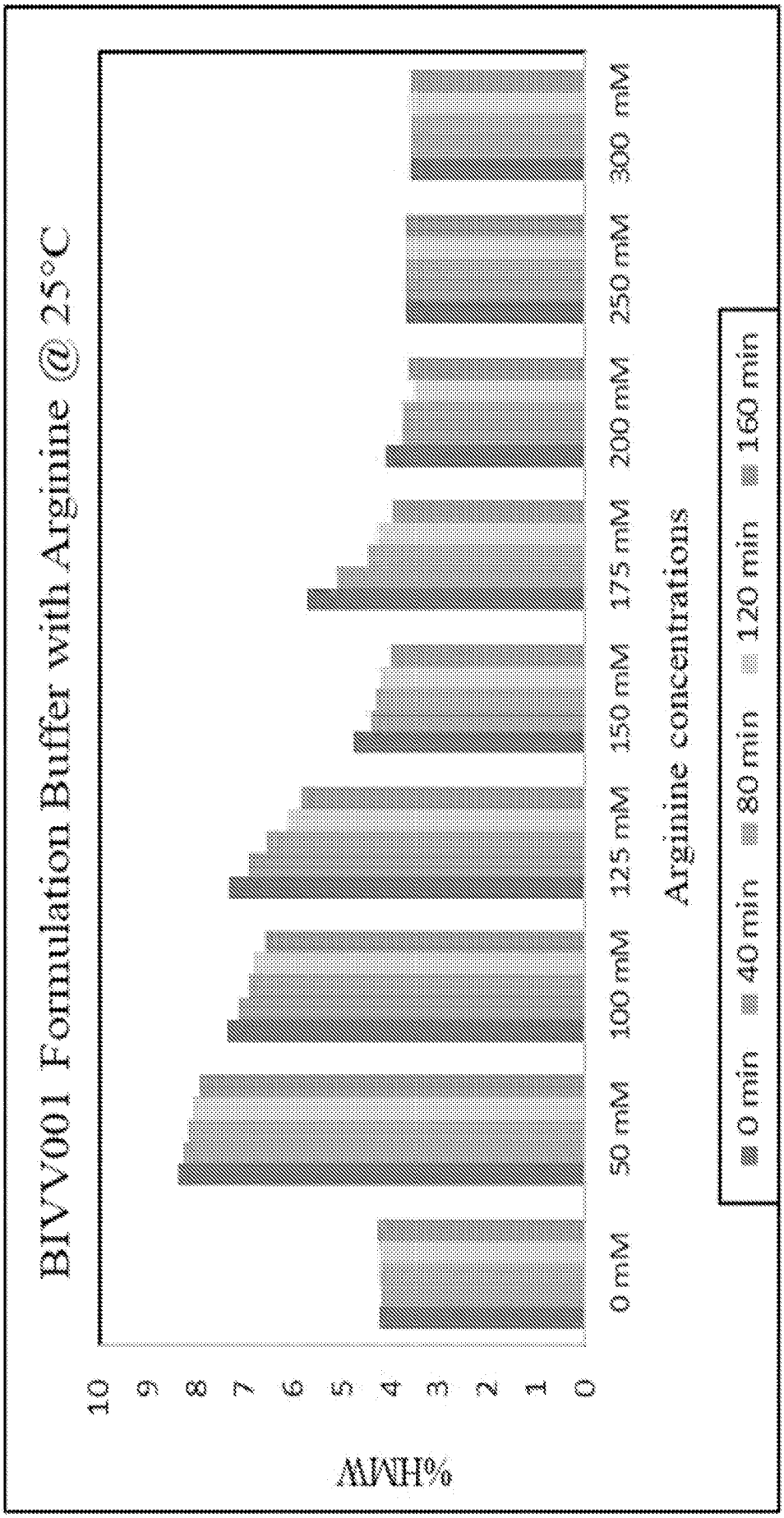

BIVV001 Formulation Buffer with Arginine @ 25°C
%HMW
10
9
8
7
6
5
4
3
2
1
0
0 mM
50 mM
100 mM
125 mM
150 mM
175 mM
200 mM
250 mM
300 mM
Arginine Concentrations
0 min
40 min
80 min
120 min
160 min

FIG. 28


BIVV001 Formulation Buffer with Arginine @ 25°C
%HMW
10
9
8
7
6
5
4
3
2
1
0
0 mM
50 mM
100 mM
125 mM
150 mM
175 mM
200 mM
250 mM
300 mM
Arginine concentrations
0 min
40 min
80 min
120 min
160 min