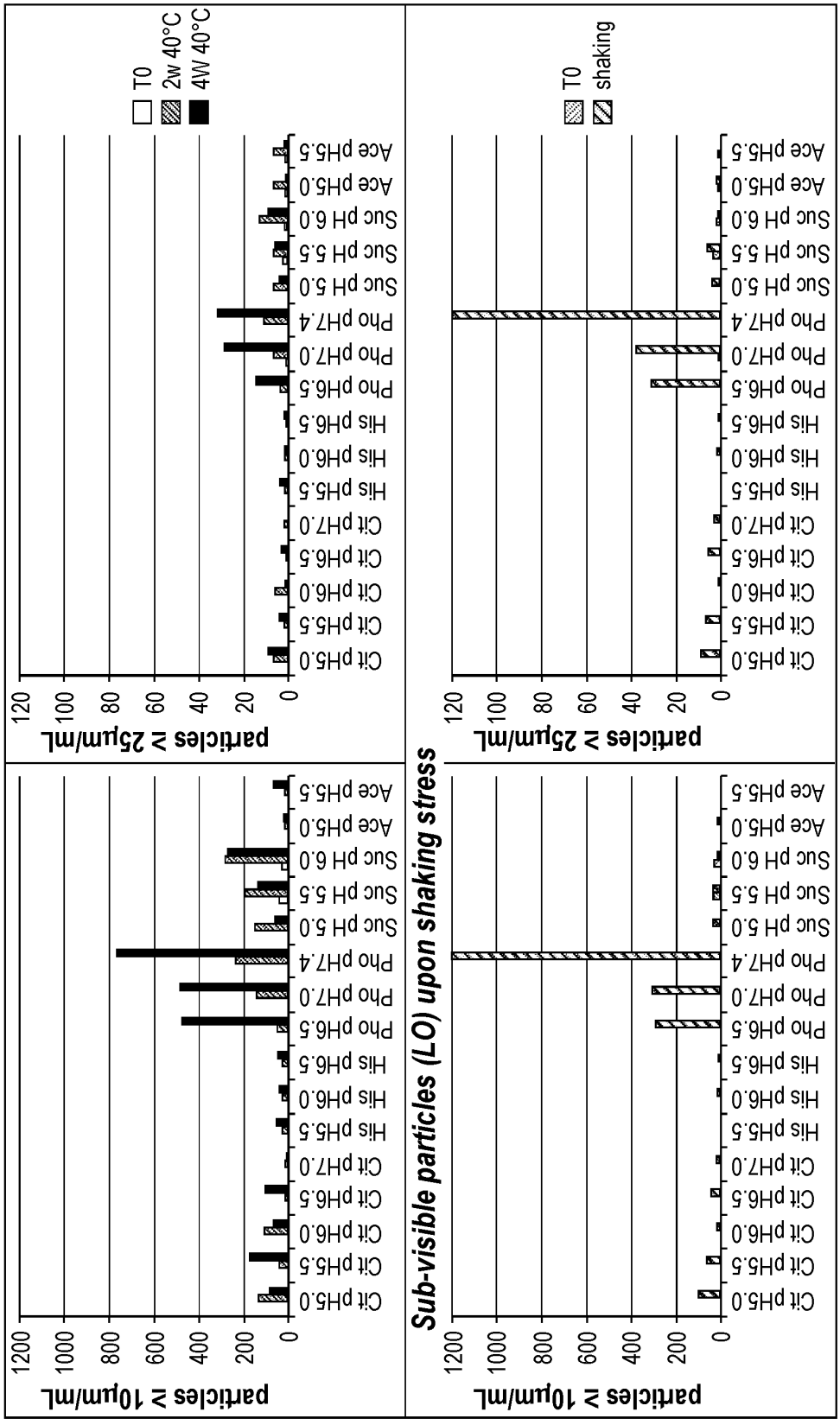

Sub-visible particles (LO) upon shaking stress
particles ≥ 10µm/mL
particles ≥ 25µm/mL
T0
shaking
T0
2w 40°C
4W 40°C
0
200
400
600
800
1000
1200
0
20
40
60
80
100
120
Cit pH5.0
Cit pH5.5
Cit pH6.0
Cit pH6.5
Cit pH7.0
His pH5.5
His pH6.0
His pH6.5
Pho pH6.5
Pho pH7.0
Pho pH7.4
Suc pH 5.0
Suc pH 5.5
Suc pH 6.0
Ace pH5.0
Ace pH5.5

Fig. 1

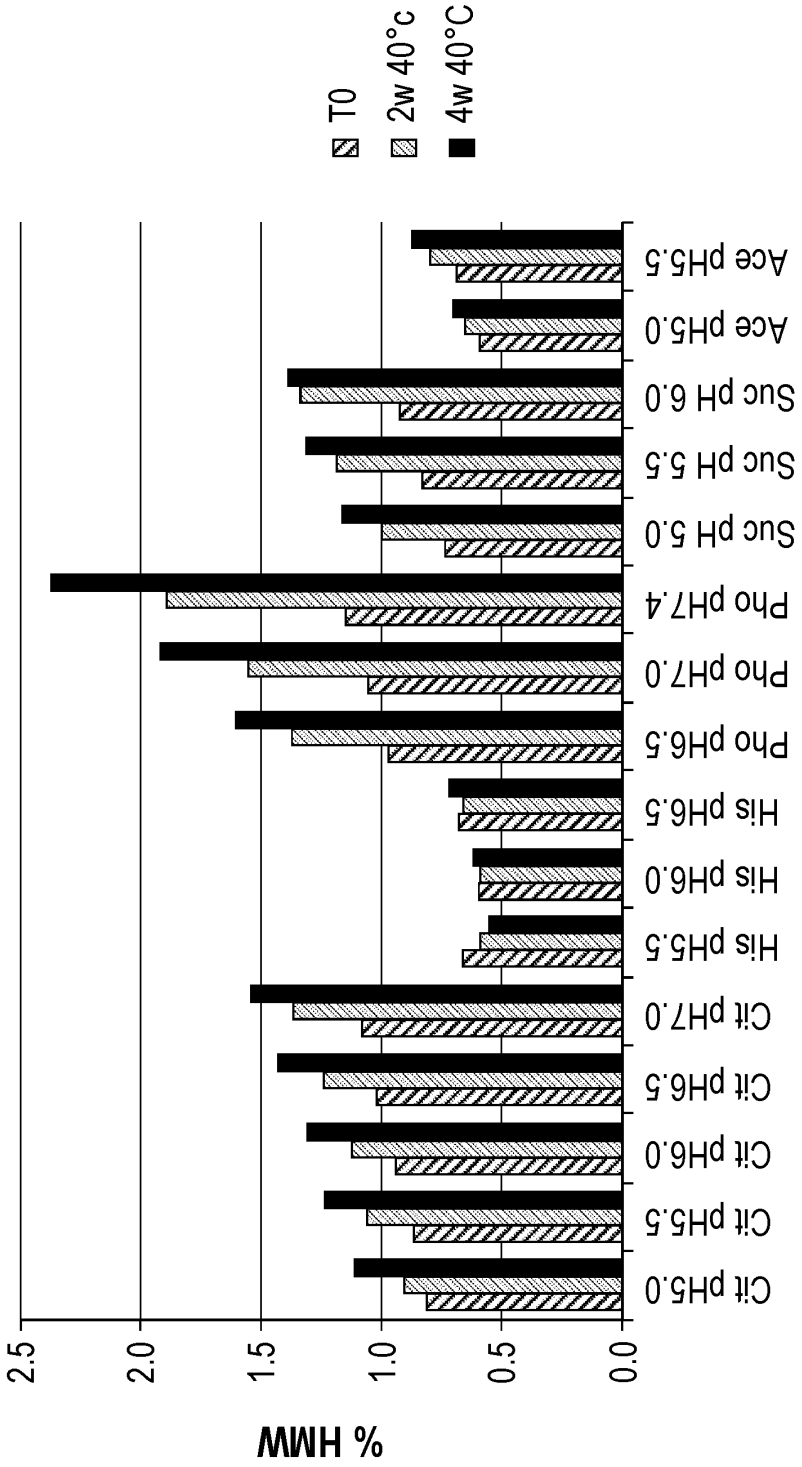

T0
2w 40°c
4w 40°C
Cit pH5.0
Cit pH5.5
Cit pH6.0
Cit pH6.5
Cit pH7.0
His pH5.5
His pH6.0
His pH6.5
Pho pH6.5
Pho pH7.0
Pho pH7.4
Suc pH 5.0
Suc pH 5.5
Suc pH 6.0
Ace pH5.0
Ace pH5.5
0.0
0.5
1.0
1.5
2.0
2.5
% HMW

Fig. 2

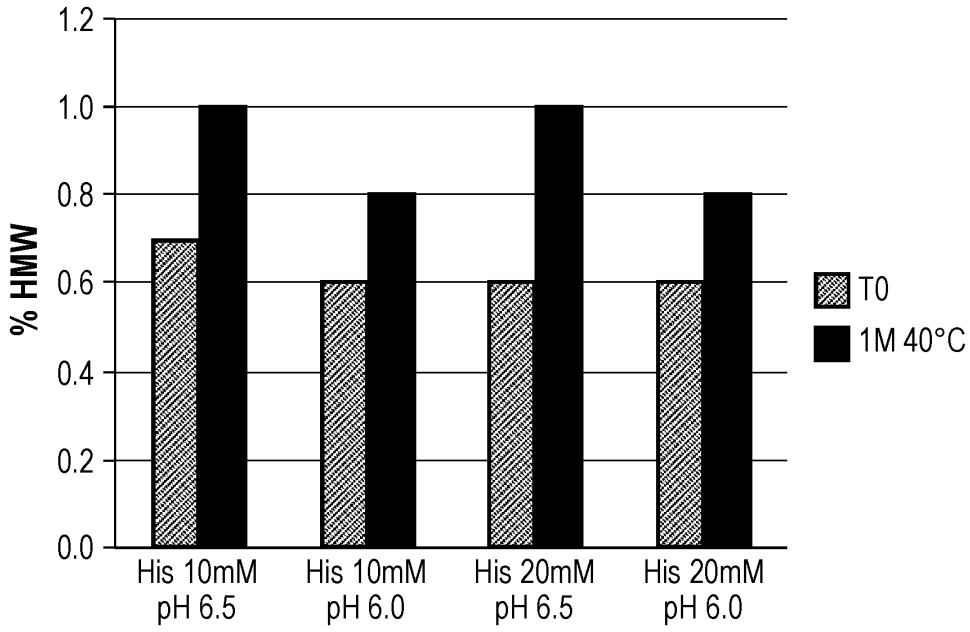

1.2
1.0
0.8
0.6
0.4
0.2
0.0
% HMW
His 10mM pH 6.5
His 10mM pH 6.0
His 20mM pH 6.5
His 20mM pH 6.0
T0
1M 40°C

Fig. 3

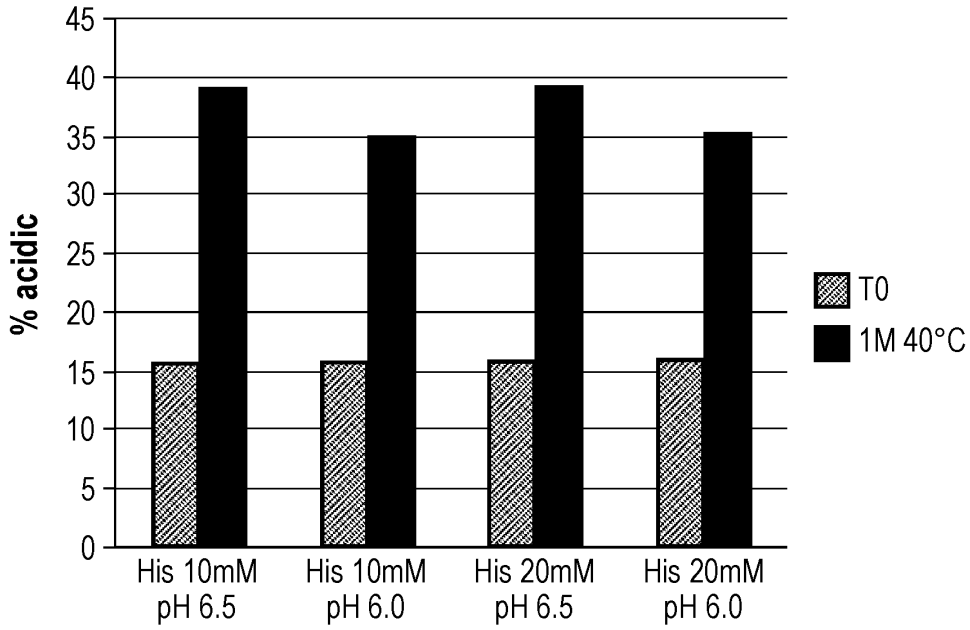

45
40
35
30
25
20
15
10
5
0
% acidic
His 10mM pH 6.5
His 10mM pH 6.0
His 20mM pH 6.5
His 20mM pH 6.0
T0
1M 40°C

Fig. 4

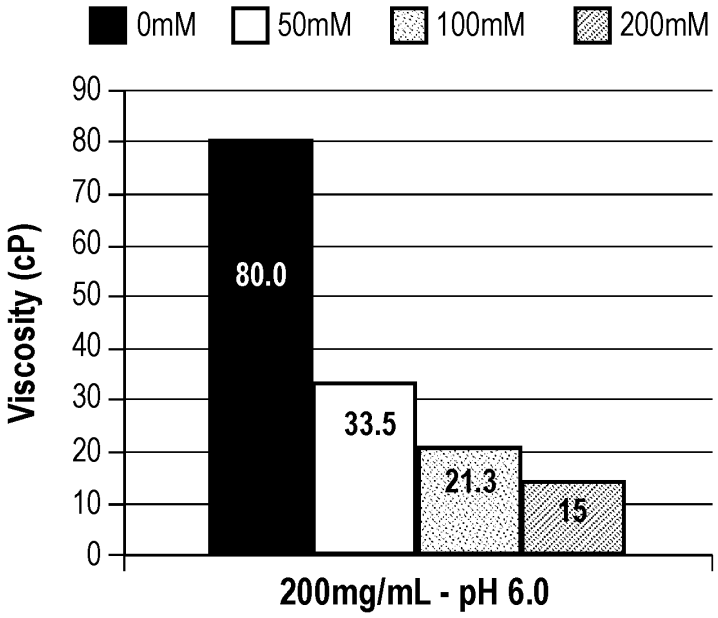

0mM
50mM
100mM
200mM
90
80
70
60
50
40
30
20
10
0
Viscosity (cP)
80.0
33.5
21.3
15
200mg/mL - pH 6.0

Fig. 5

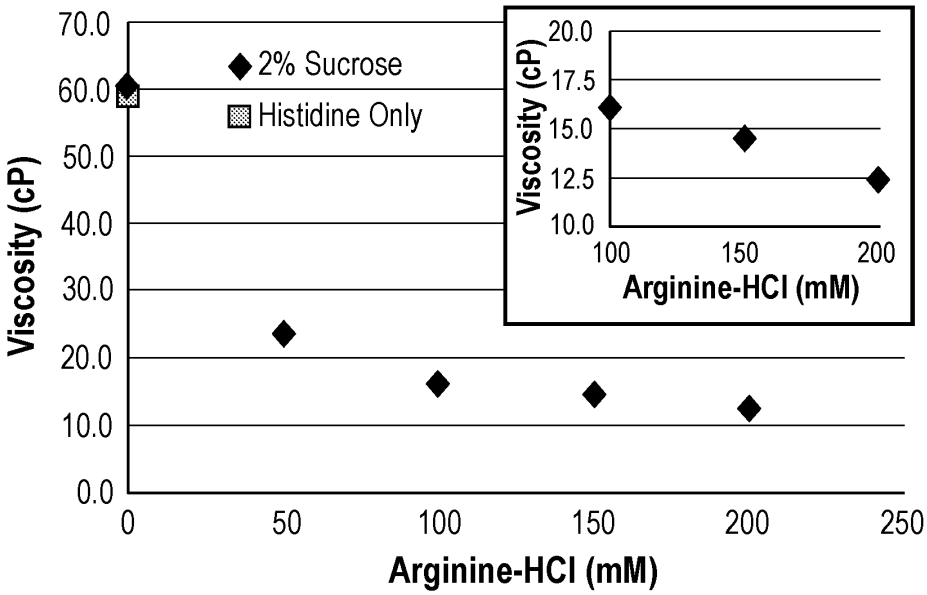

70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Viscosity (cP)
2% Sucrose
Histidine Only
0
50
100
150
200
250
Arginine-HCl (mM)
20.0
17.5
15.0
12.5
10.0
Viscosity (cP)
100
150
200
Arginine-HCl (mM)

Fig. 6A

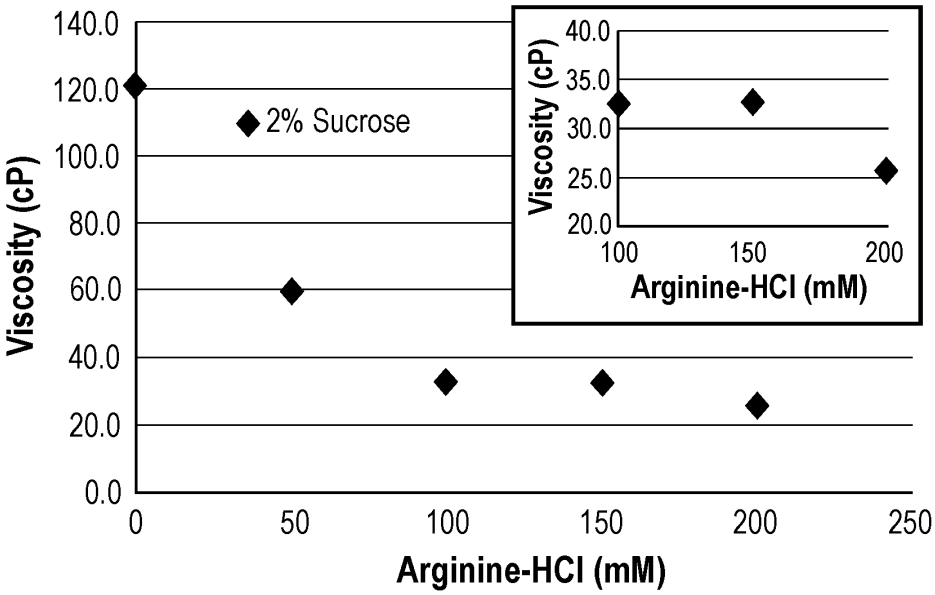

140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Viscosity (cP)
2% Sucrose
0
50
100
150
200
250
Arginine-HCl (mM)
40.0
35.0
30.0
25.0
20.0
Viscosity (cP)
100
150
200
Arginine-HCl (mM)

Fig. 6B

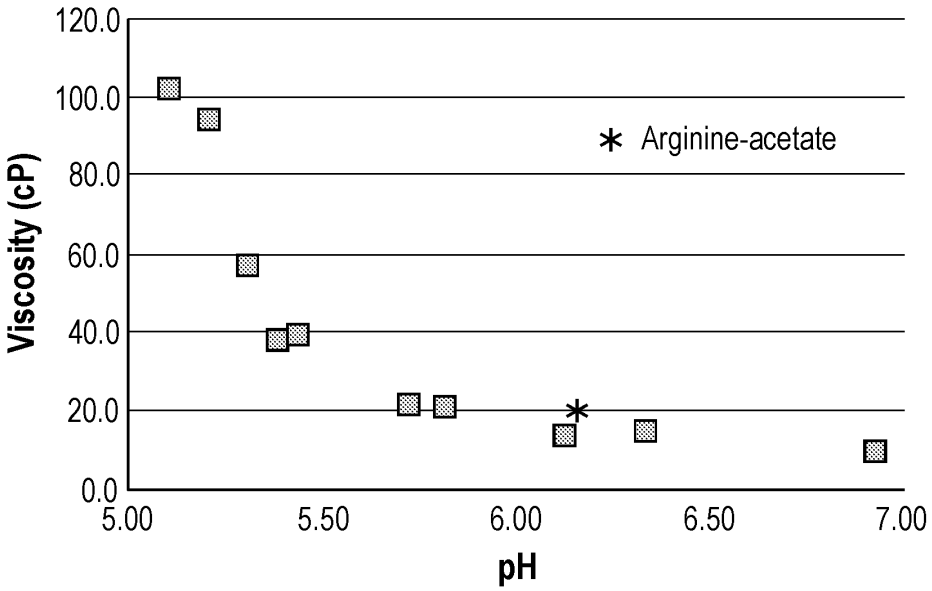

120.0
100.0
80.0
60.0
40.0
20.0
0.0
Viscosity (cP)
Arginine-acetate
5.00
5.50
6.00
6.50
7.00
pH

Fig. 7A

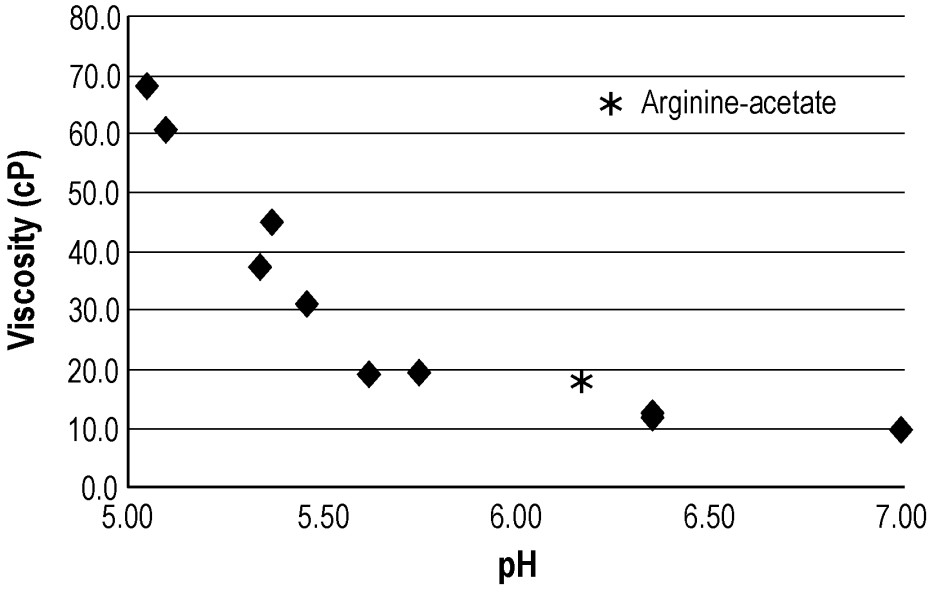

80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
Viscosity (cP)
Arginine-acetate
5.00
5.50
6.00
6.50
7.00
pH

Fig. 7B

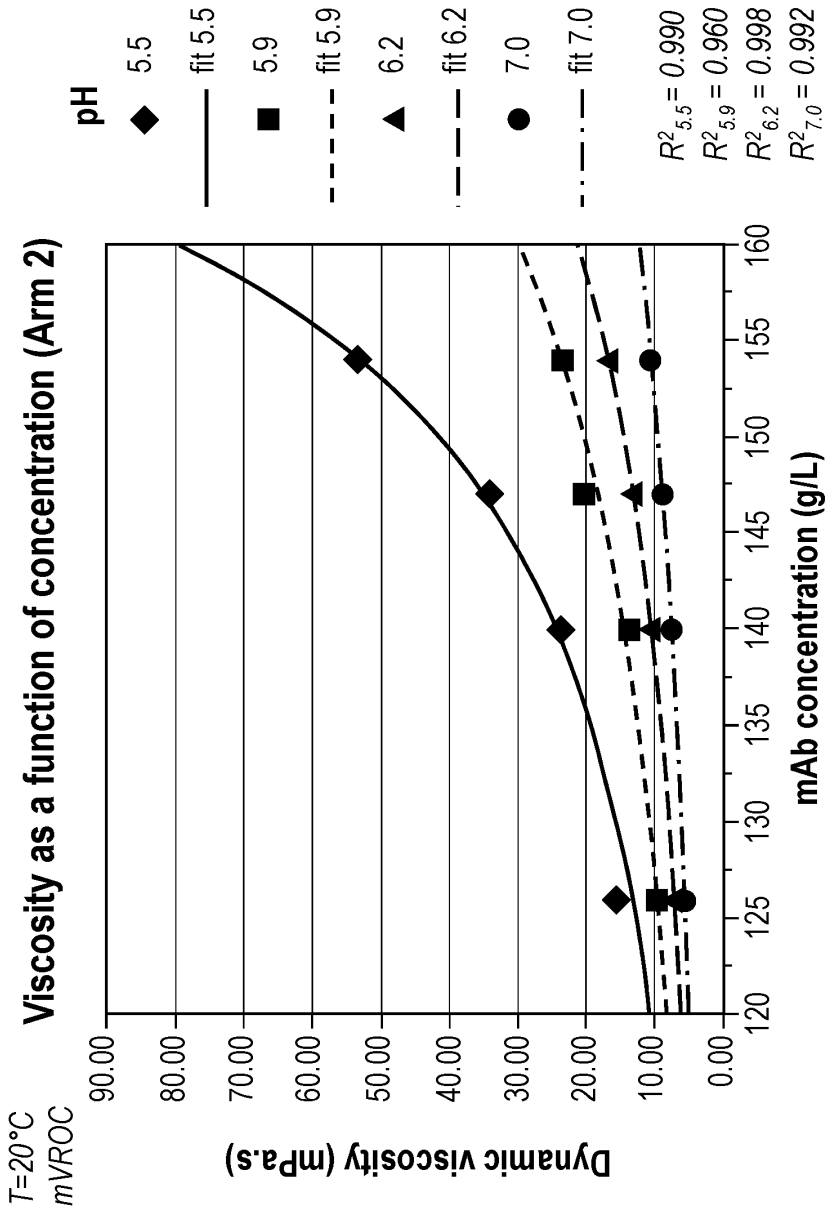

Viscosity as a function of concentration (Arm 2)
T=20°C
mVROC
pH
5.5
fit 5.5
5.9
fit 5.9
6.2
fit 6.2
7.0
fit 7.0
$R^2_{5.5}$ = 0.990
$R^2_{5.9}$ = 0.960
$R^2_{6.2}$ = 0.998
$R^2_{7.0}$ = 0.992
Dynamic viscosity (mPa.s)
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
120
125
130
135
140
145
150
155
160
mAb concentration (g/L)

Fig. 8

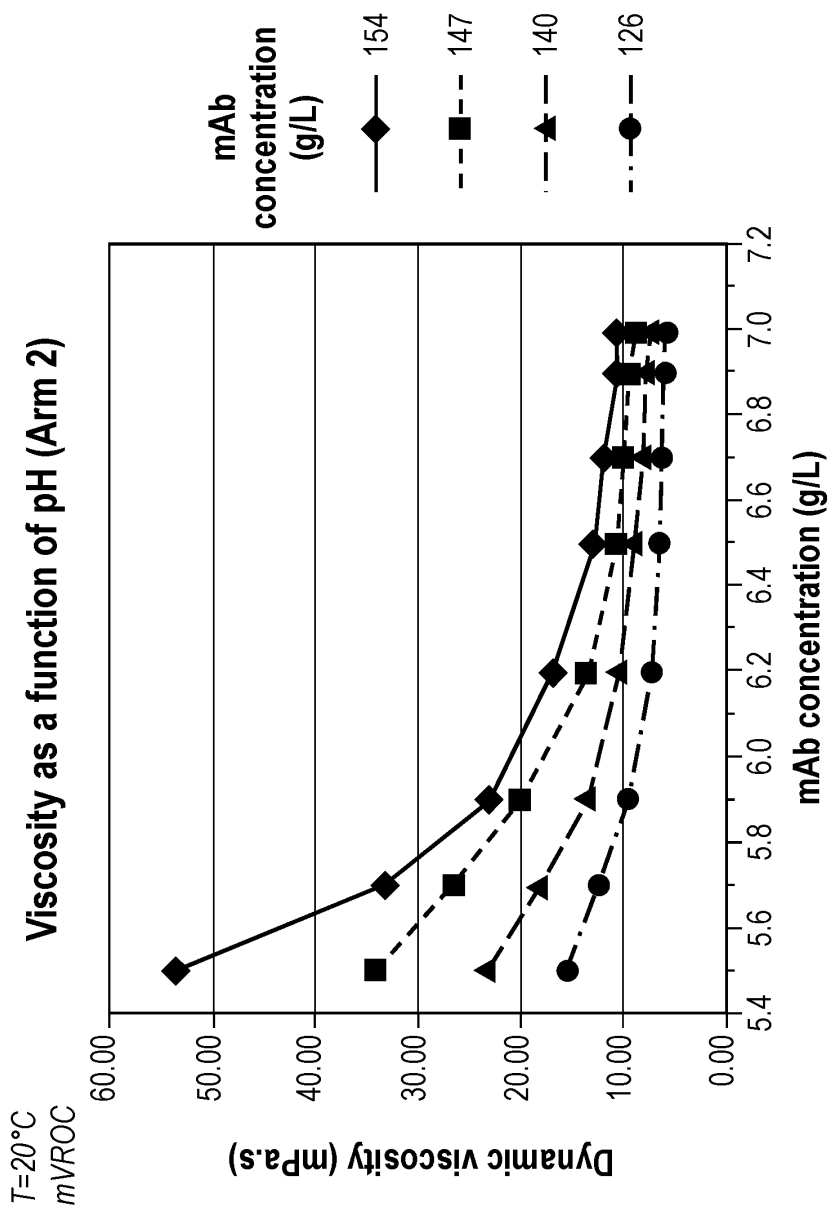

Viscosity as a function of pH (Arm 2)
T=20°C
mVROC
mAb concentration (g/L)
154
147
140
126
Dynamic viscosity (mPa.s)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
5.4
5.6
5.8
6.0
6.2
6.4
6.6
6.8
7.0
7.2
mAb concentration (g/L)

Fig. 9

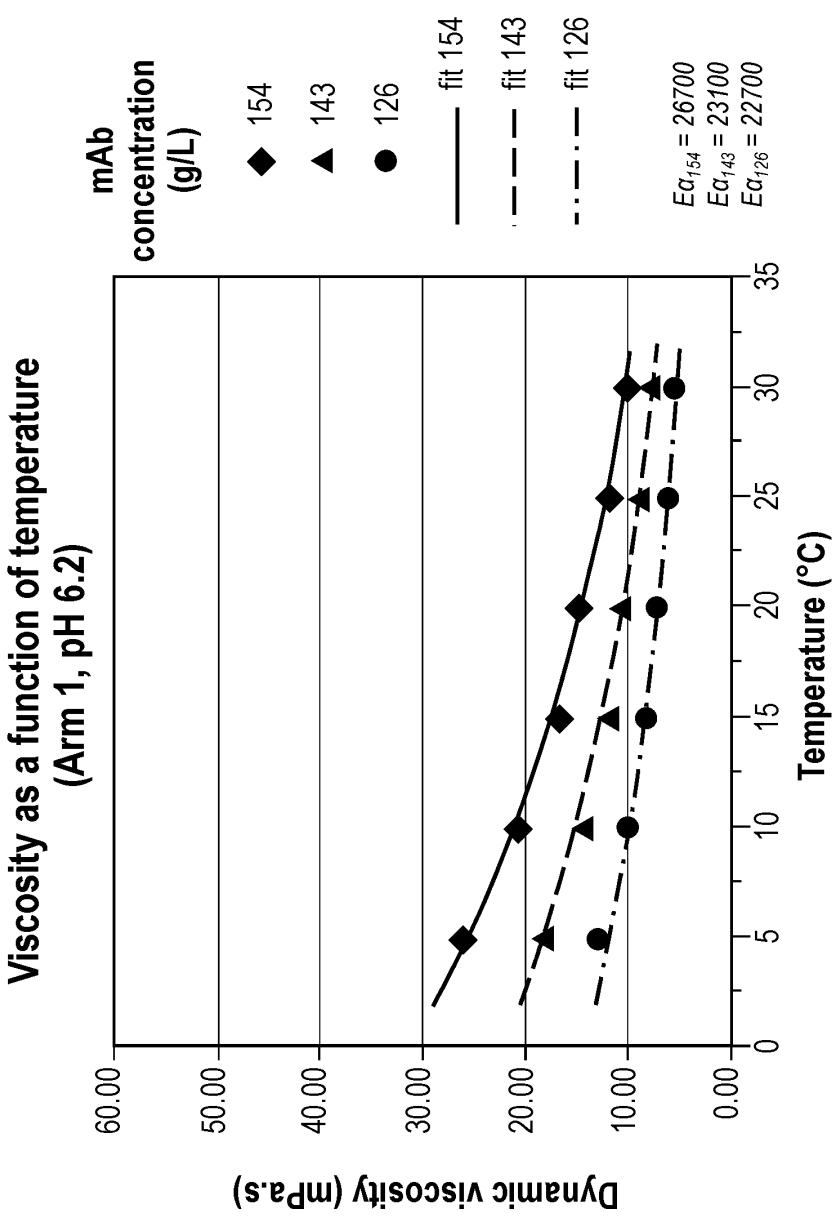

Viscosity as a function of temperature
(Arm 1, pH 6.2)
mAb concentration (g/L)
154
143
126
fit 154
fit 143
fit 126
Ea_{154} = 26700
Ea_{143} = 23100
Ea_{126} = 22700
Dynamic viscosity (mPa.s)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0
5
10
15
20
25
30
35
Temperature (°C)

Fig. 10

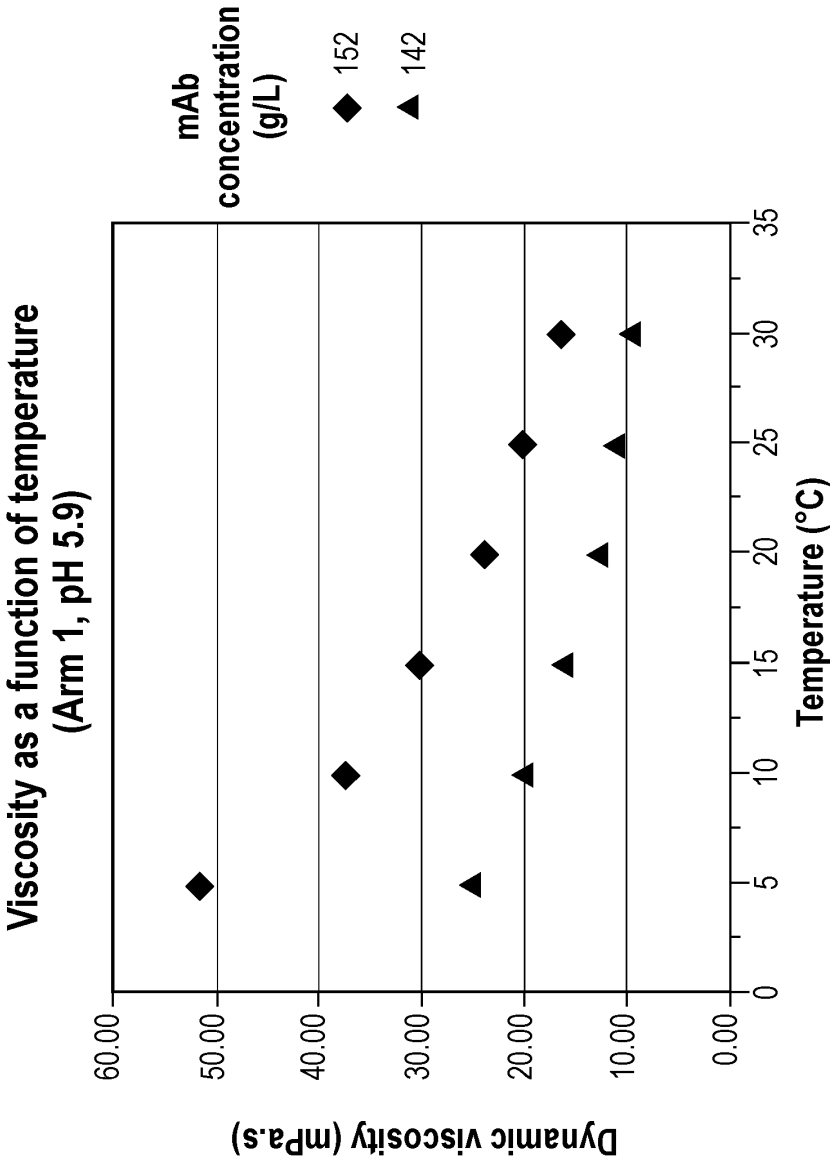

Viscosity as a function of temperature
(Arm 1, pH 5.9)
mAb
concentration
(g/L)
152
142
Dynamic viscosity (mPa.s)
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0
5
10
15
20
25
30
35
Temperature (°C)

Fig. 11

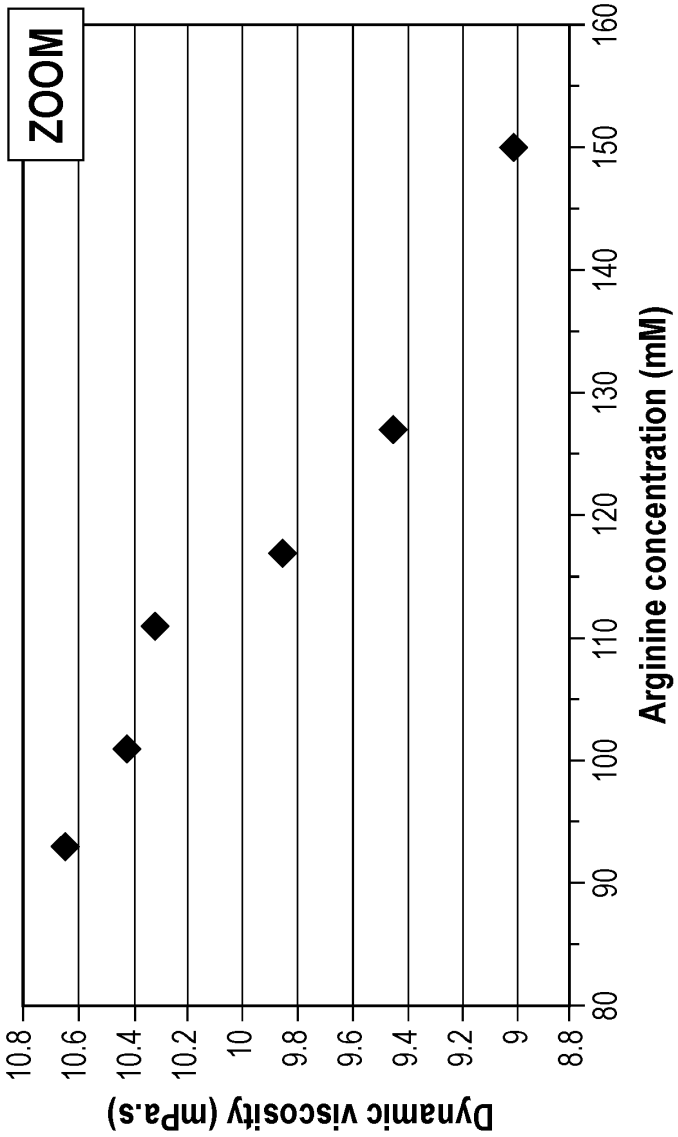

ZOOM
Dynamic viscosity (mPa.s)
10.8
10.6
10.4
10.2
10
9.8
9.6
9.4
9.2
9
8.8
Arginine concentration (mM)
80
90
100
110
120
130
140
150
160

Fig. 12

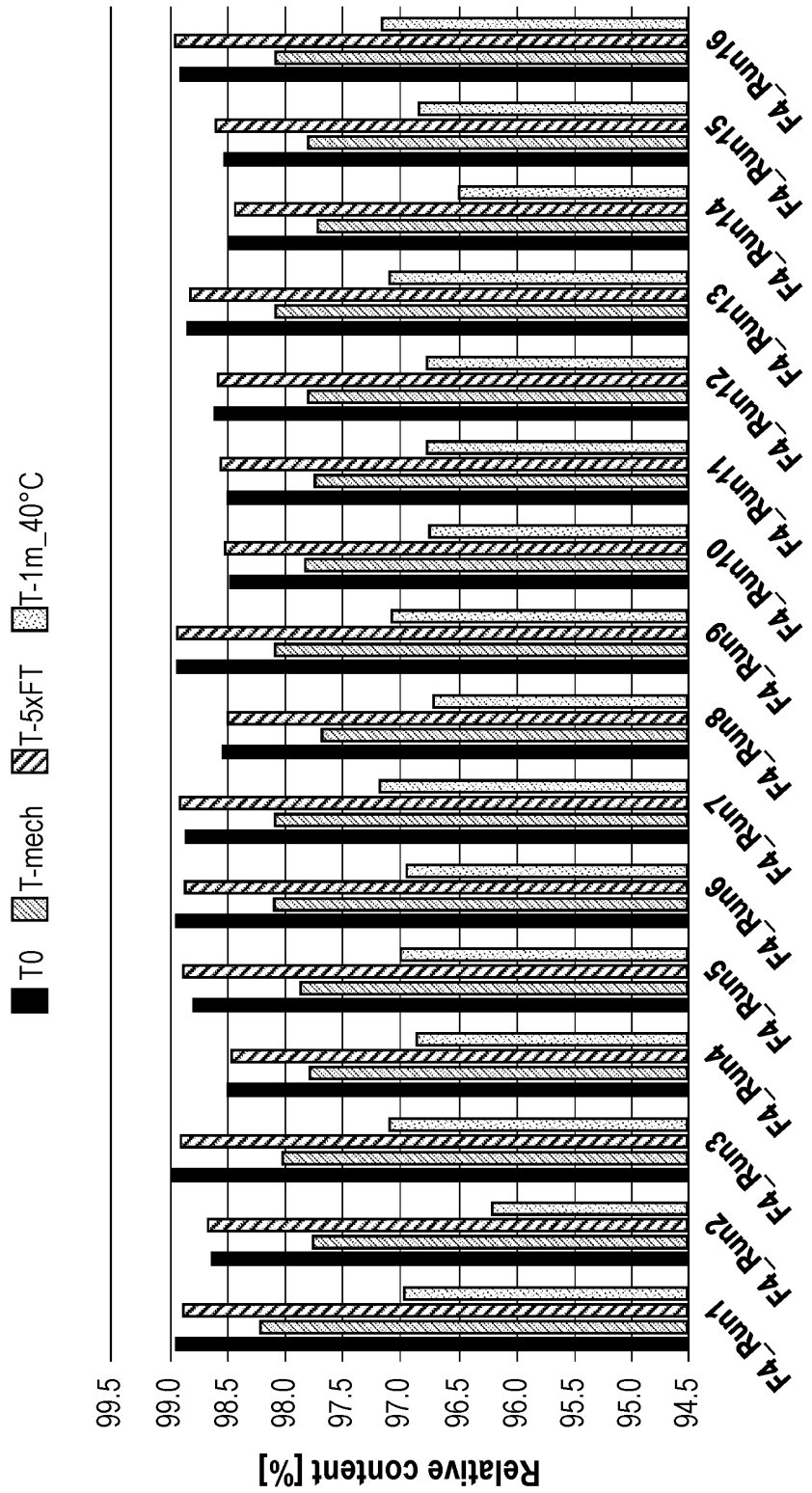

T0
T-mech
T-5xFT
T-1m_40°C
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
94.5
Relative content [%]
F4_Run1
F4_Run2
F4_Run3
F4_Run4
F4_Run5
F4_Run6
F4_Run7
F4_Run8
F4_Run9
F4_Run10
F4_Run11
F4_Run12
F4_Run13
F4_Run14
F4_Run15
F4_Run16

Fig. 13

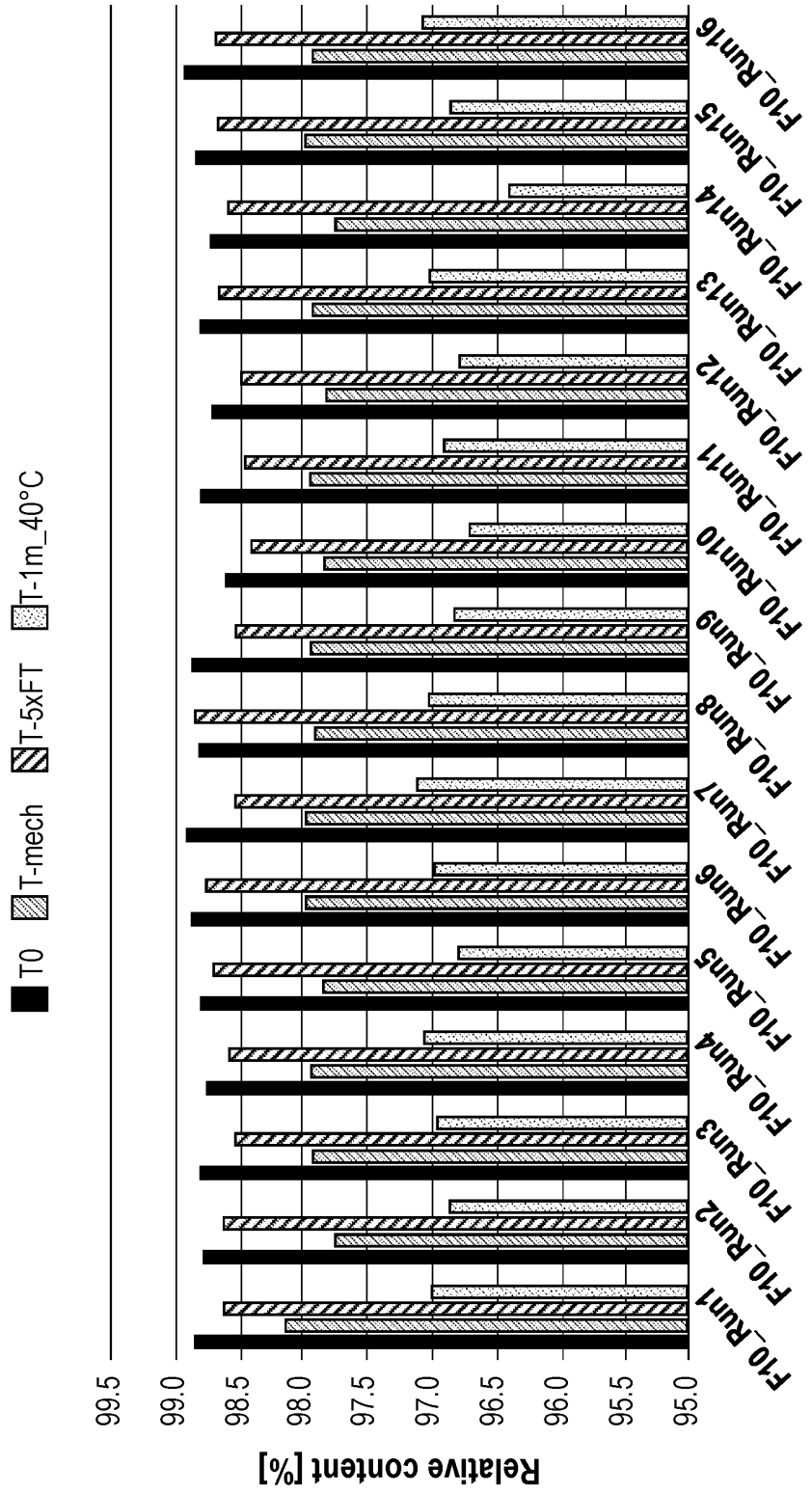

T0
T-mech
T-5xFT
T-1m_40°C
99.5
99.0
98.5
98.0
97.5
97.0
96.5
96.0
95.5
95.0
Relative content [%]
F10_Run1
F10_Run2
F10_Run3
F10_Run4
F10_Run5
F10_Run6
F10_Run7
F10_Run8
F10_Run9
F10_Run10
F10_Run11
F10_Run12
F10_Run13
F10_Run14
F10_Run15
F10_Run16

Fig. 14

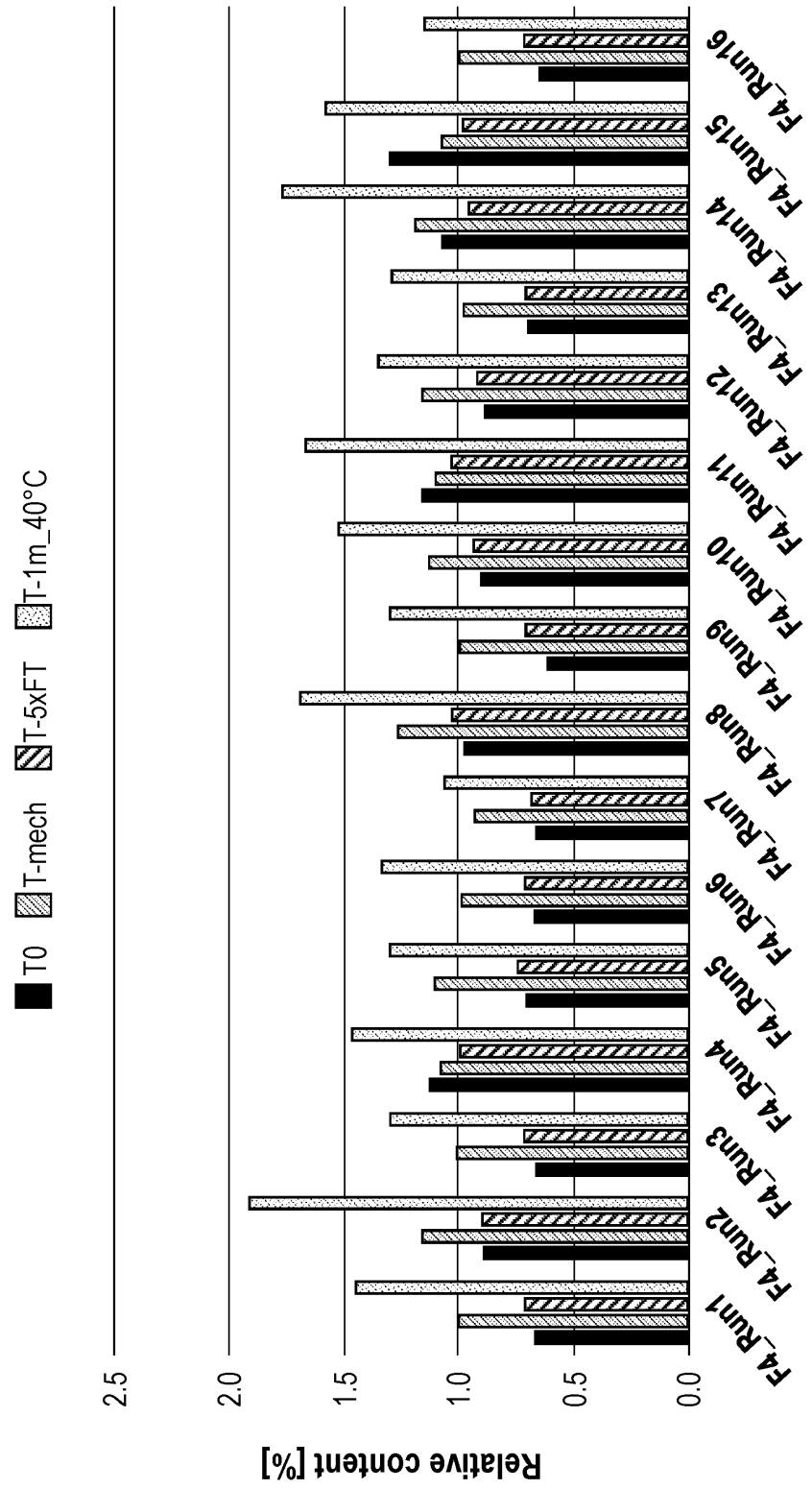

T0
T-mech
T-5xFT
T-1m_40°C
Relative content [%]
2.5
2.0
1.5
1.0
0.5
0.0
F4_Run1
F4_Run2
F4_Run3
F4_Run4
F4_Run5
F4_Run6
F4_Run7
F4_Run8
F4_Run9
F4_Run10
F4_Run11
F4_Run12
F4_Run13
F4_Run14
F4_Run15
F4_Run16

Fig. 15

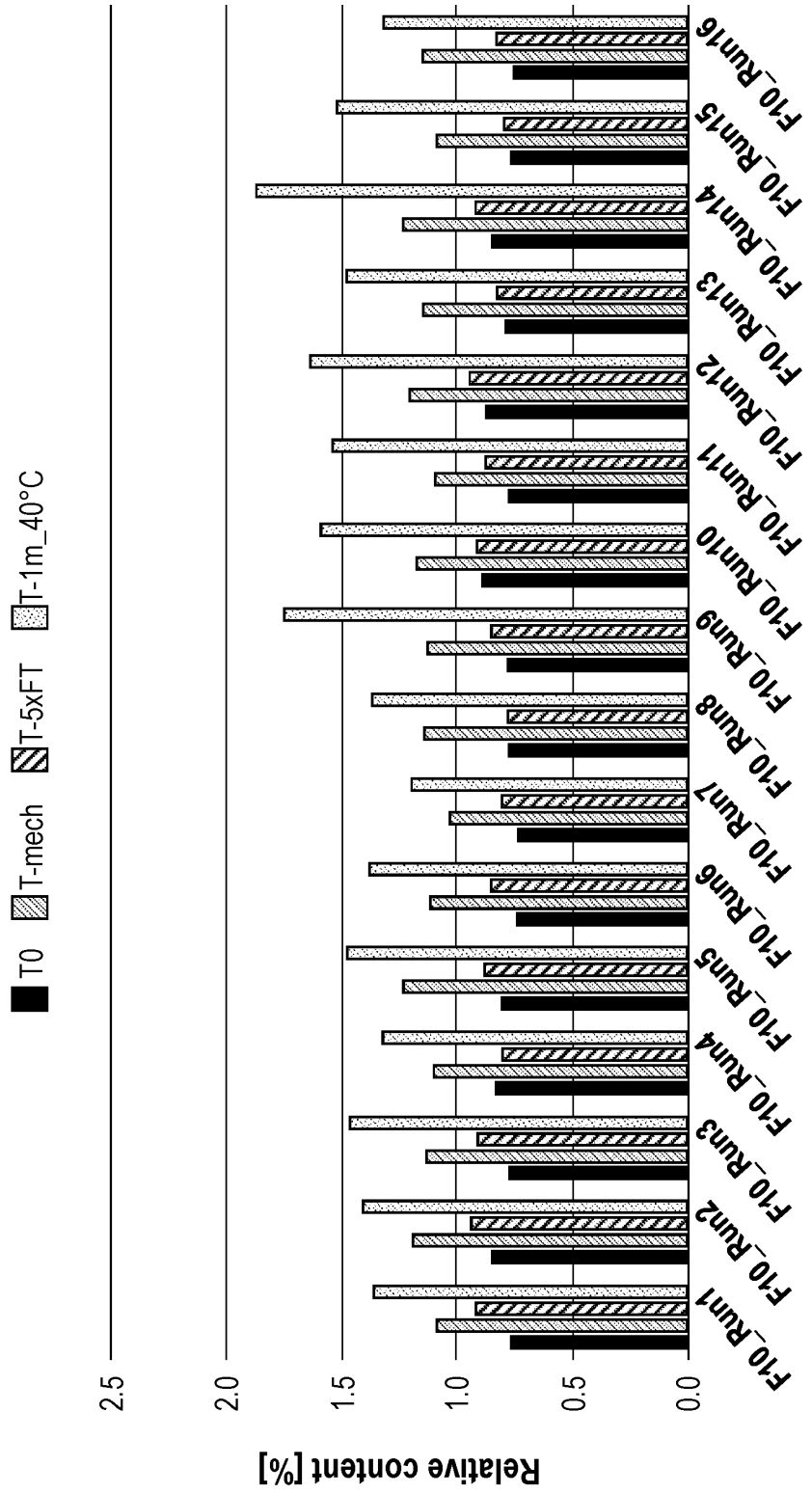

T0
T-mech
T-5xFT
T-1m_40°C
2.5
2.0
1.5
1.0
0.5
0.0
Relative content [%]
F10_Run1
F10_Run2
F10_Run3
F10_Run4
F10_Run5
F10_Run6
F10_Run7
F10_Run8
F10_Run9
F10_Run10
F10_Run11
F10_Run12
F10_Run13
F10_Run14
F10_Run15
F10_Run16

Fig. 16

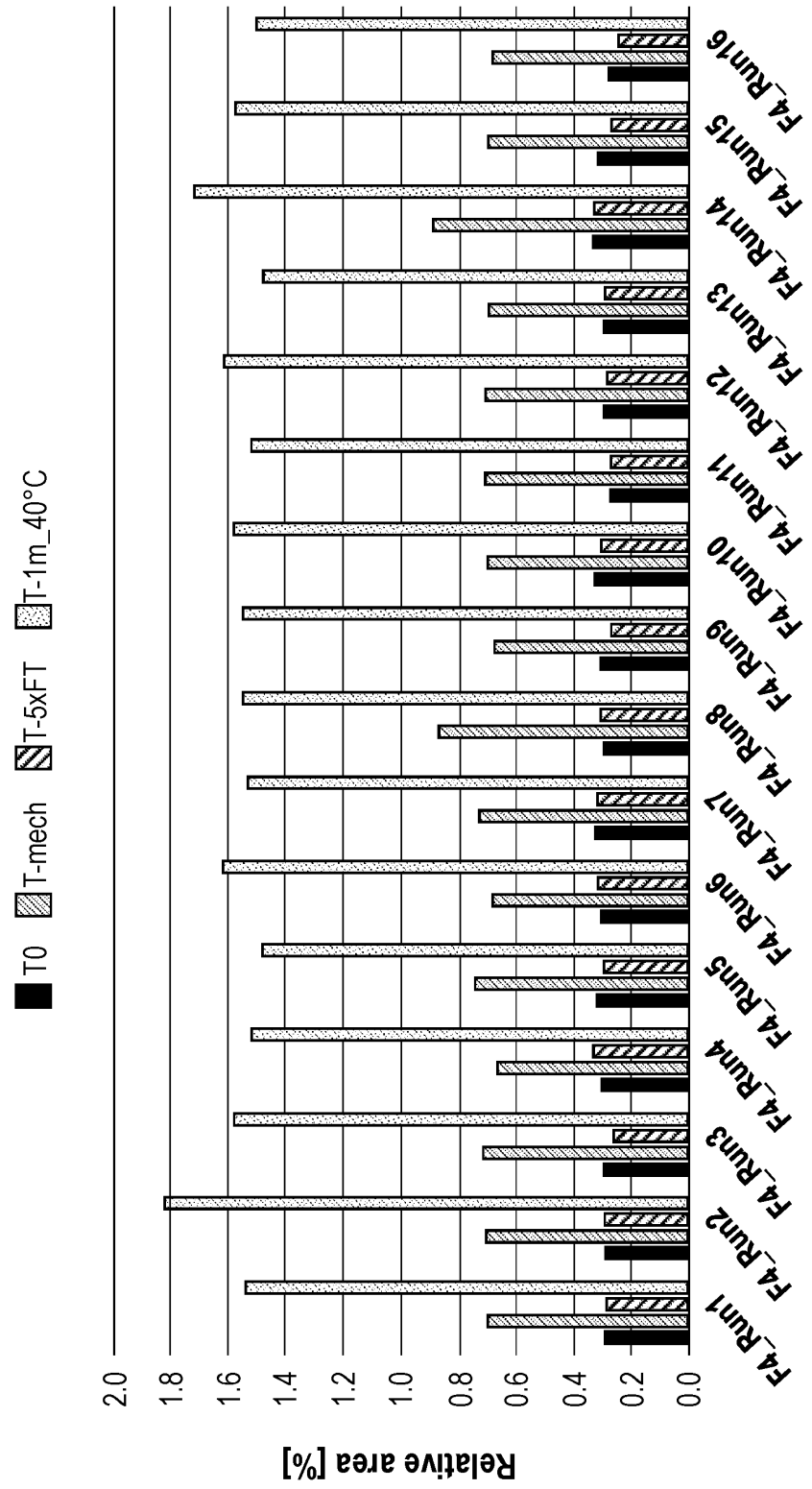

T0
T-mech
T-5xFT
T-1m_40°C
Relative area [%]
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
F4_Run1
F4_Run2
F4_Run3
F4_Run4
F4_Run5
F4_Run6
F4_Run7
F4_Run8
F4_Run9
F4_Run10
F4_Run11
F4_Run12
F4_Run13
F4_Run14
F4_Run15
F4_Run16

Fig. 17

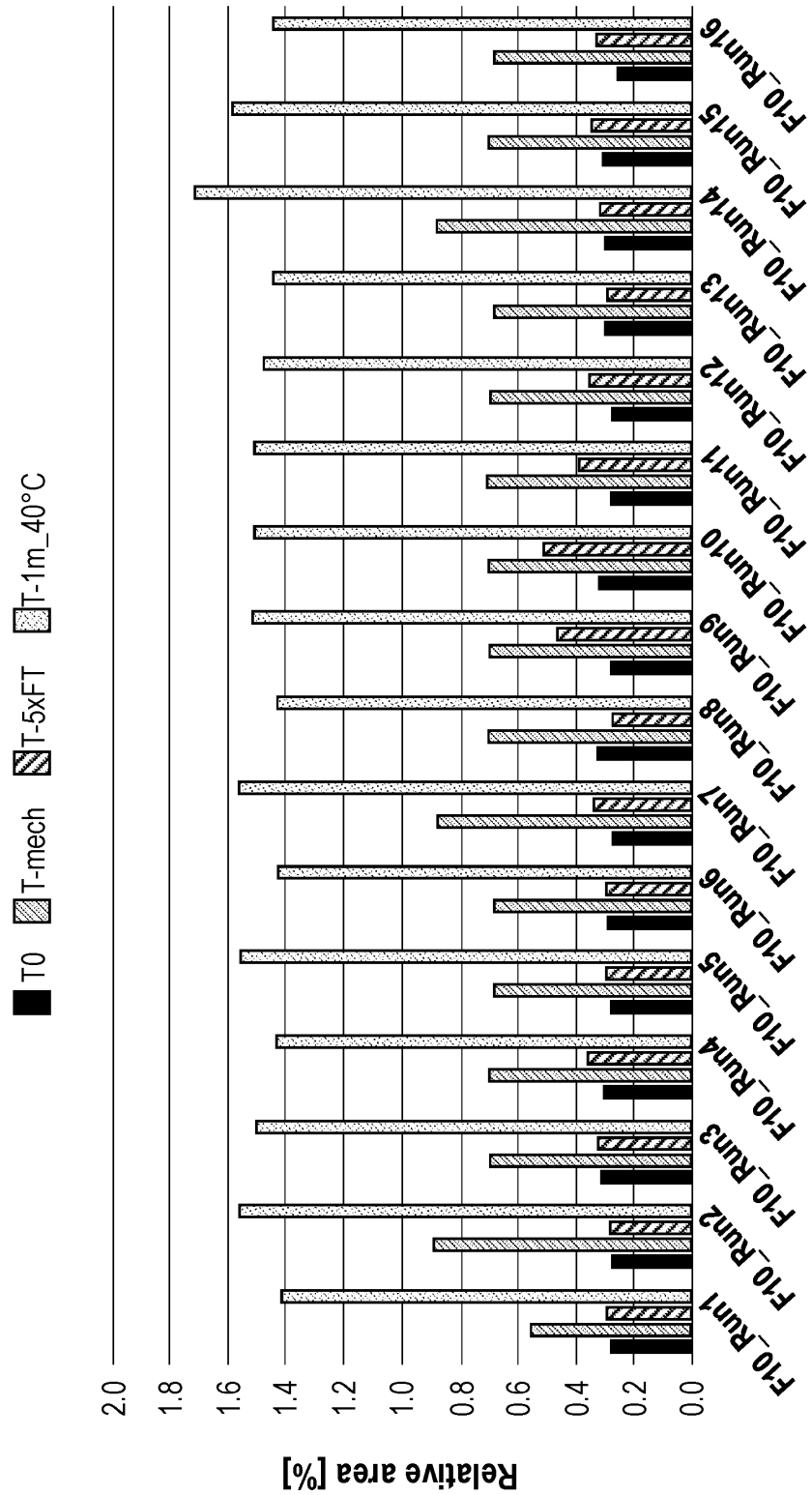

T0
T-mech
T-5xFT
T-1m_40°C
Relative area [%]
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
F10_Run1
F10_Run2
F10_Run3
F10_Run4
F10_Run5
F10_Run6
F10_Run7
F10_Run8
F10_Run9
F10_Run10
F10_Run11
F10_Run12
F10_Run13
F10_Run14
F10_Run15
F10_Run16

Fig. 18

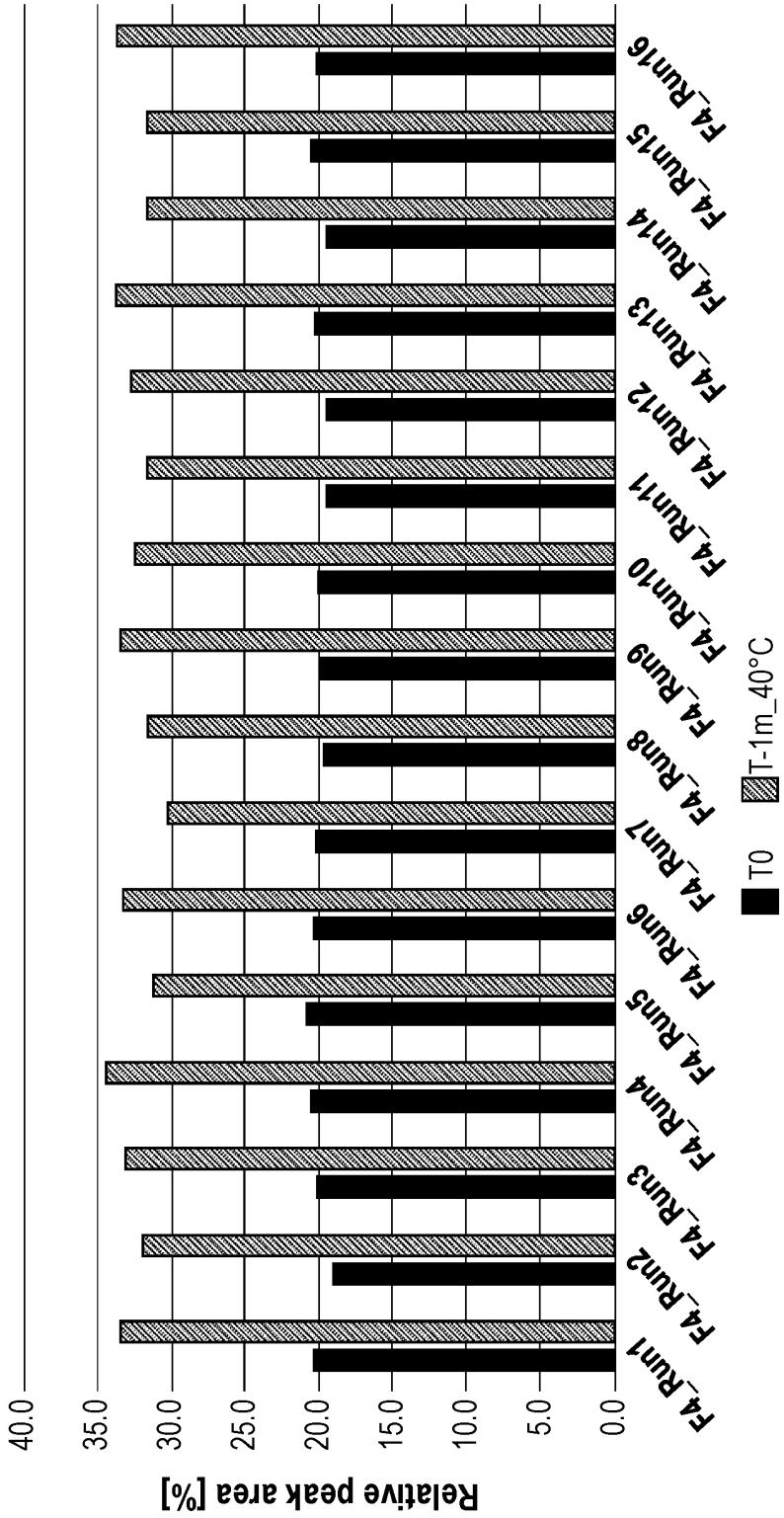

Relative peak area [%]
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
F4_Run1
F4_Run2
F4_Run3
F4_Run4
F4_Run5
F4_Run6
F4_Run7
F4_Run8
F4_Run9
F4_Run10
F4_Run11
F4_Run12
F4_Run13
F4_Run14
F4_Run15
F4_Run16
T0
T-1m_40°C

Fig. 19

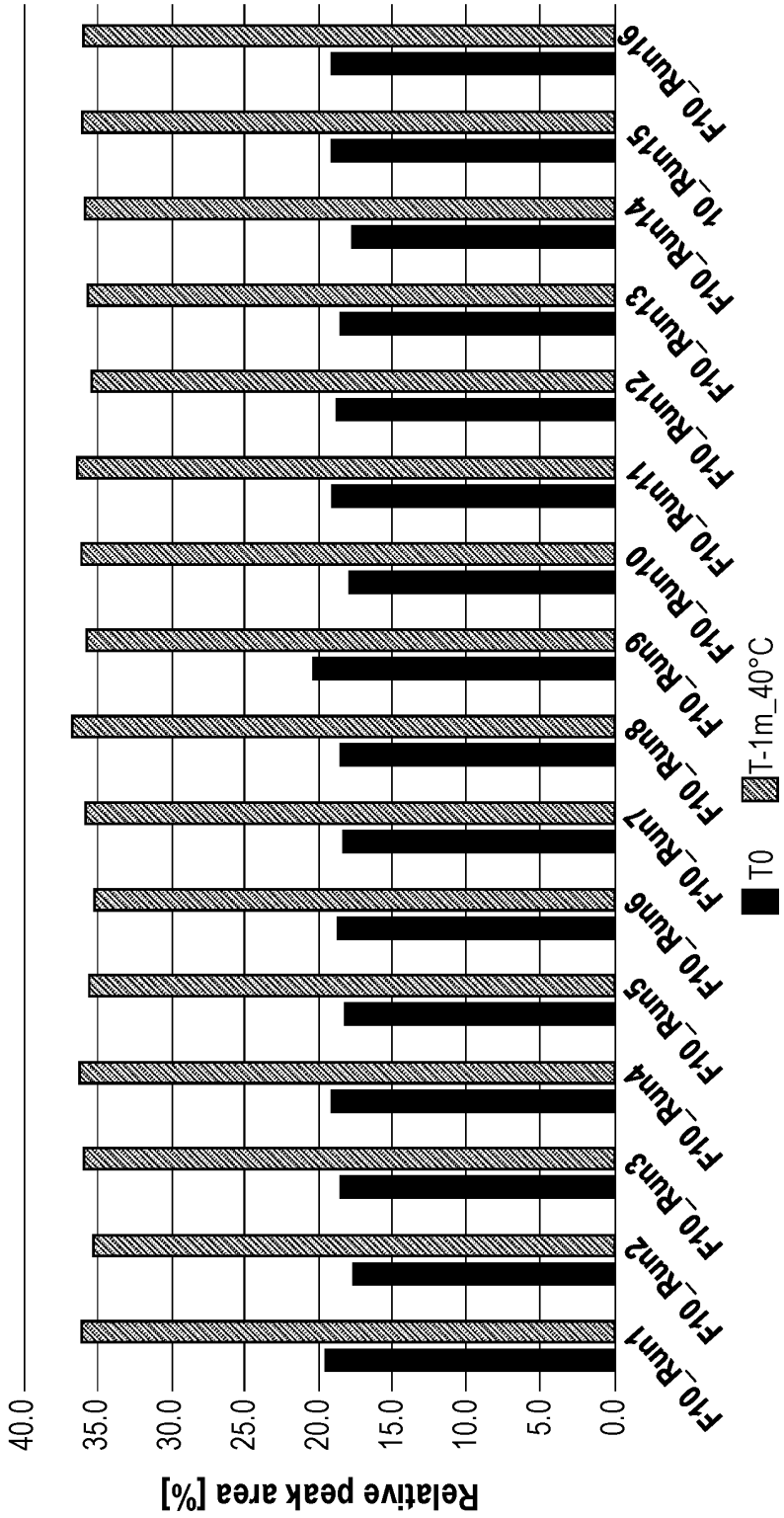

Relative peak area [%]
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
F10_Run1
F10_Run2
F10_Run3
F10_Run4
F10_Run5
F10_Run6
F10_Run7
F10_Run8
F10_Run9
F10_Run10
F10_Run11
F10_Run12
F10_Run13
F10_Run14
F10_Run15
F10_Run16
T0
T-1m_40°C

Fig. 20

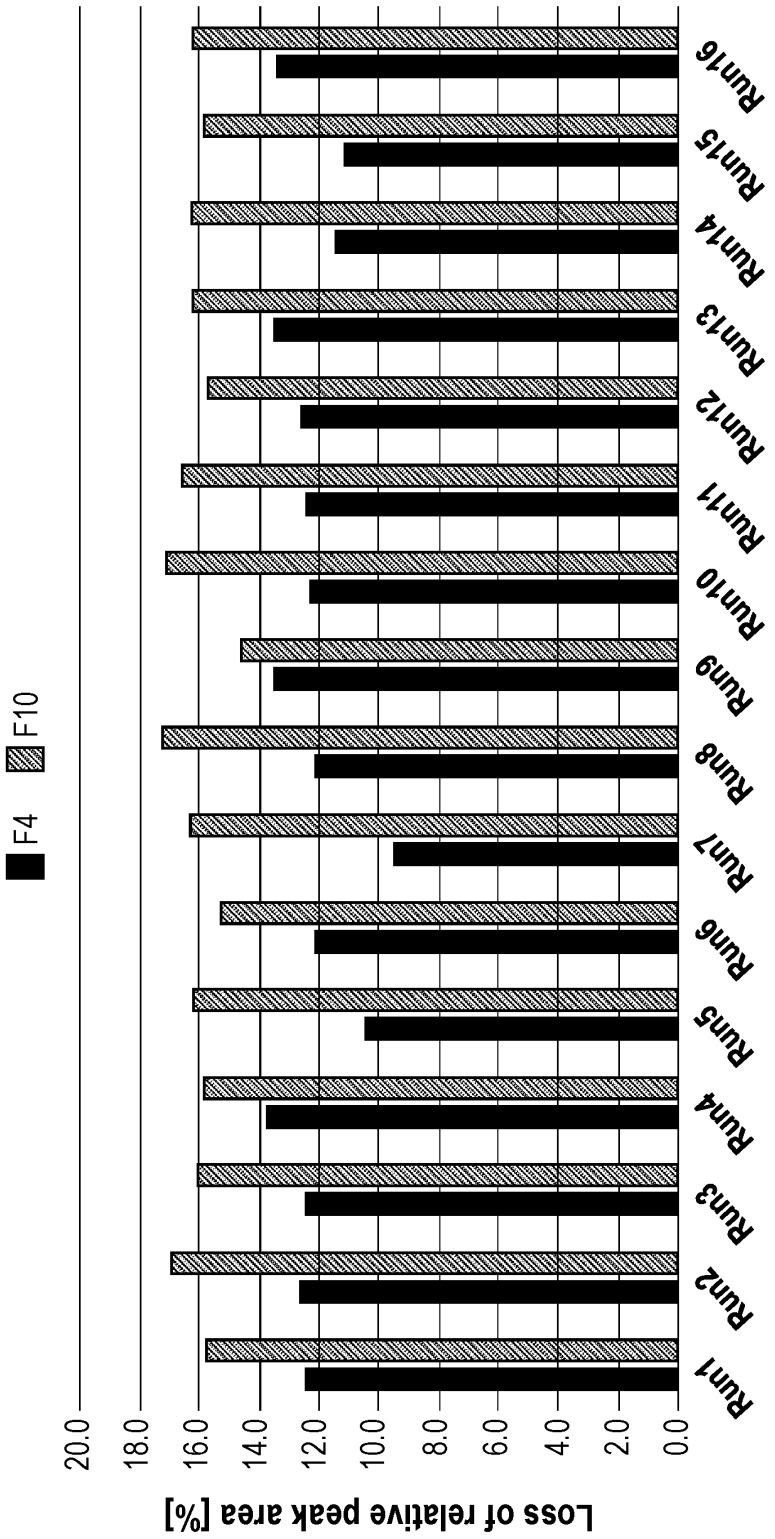

F4
F10
Loss of relative peak area [%]
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Run1
Run2
Run3
Run4
Run5
Run6
Run7
Run8
Run9
Run10
Run11
Run12
Run13
Run14
Run15
Run16

Fig. 21

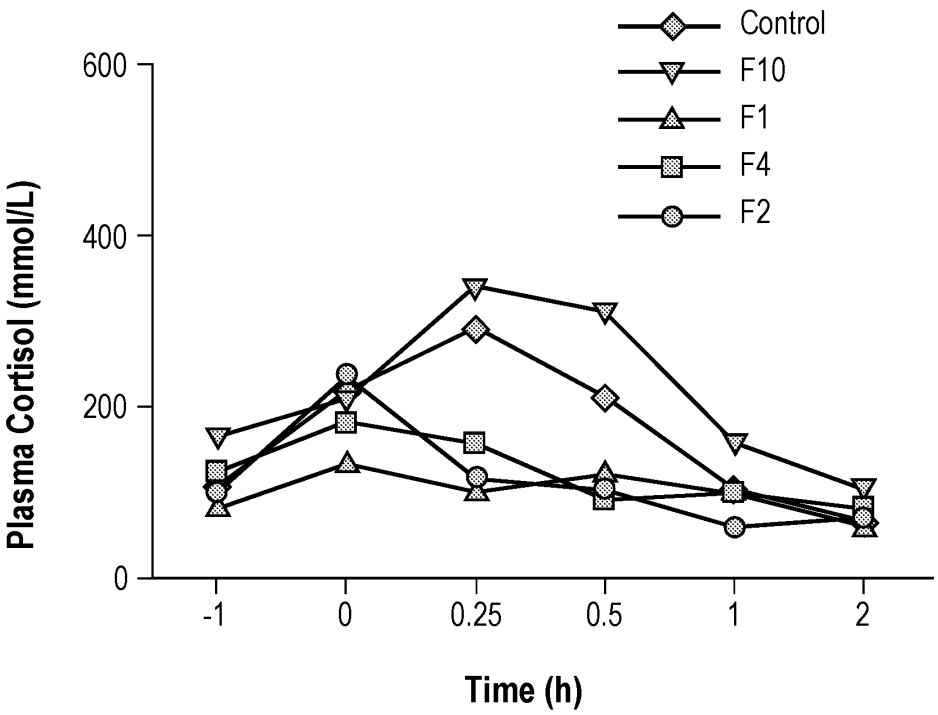

Control
F10
F1
F4
F2
600
400
200
0
Plasma Cortisol (mmol/L)
-1
0
0.25
0.5
1
2
Time (h)

Fig. 22

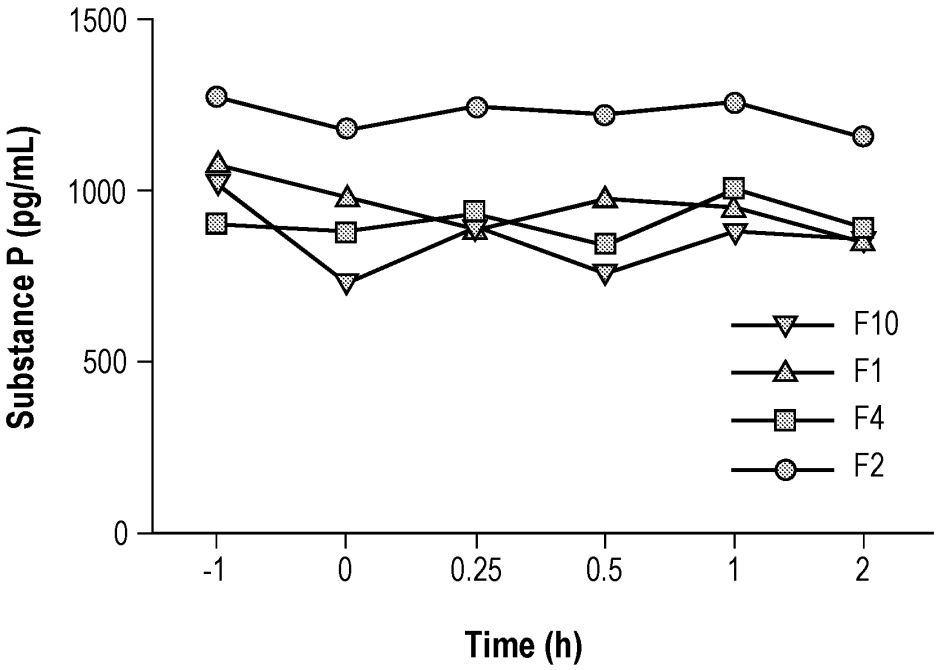


Fig. 23

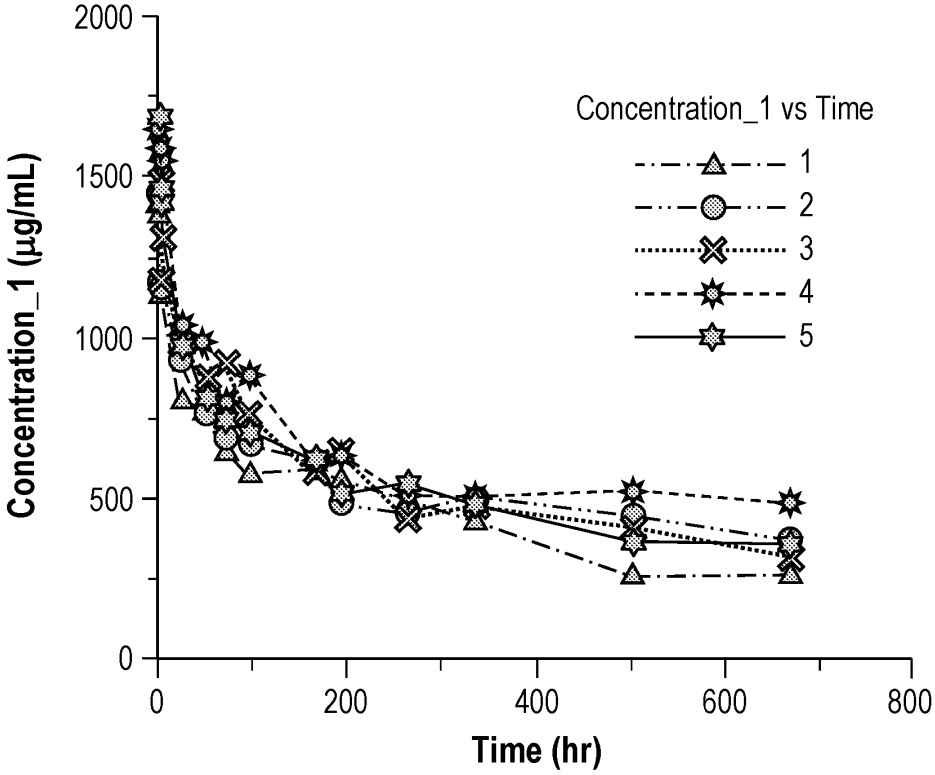

Concentration_1 vs Time
1
2
3
4
5
Concentration_1 (µg/mL)
2000
1500
1000
500
0
0
200
400
600
800
Time (hr)

Fig. 24

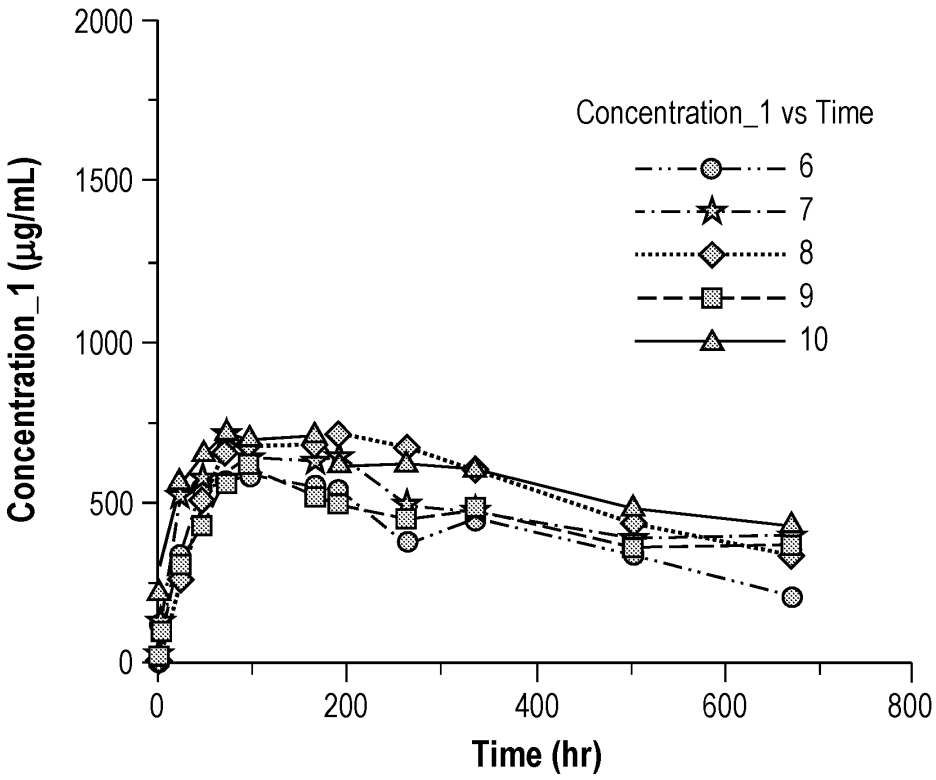

Concentration_1 vs Time
6
7
8
9
10
Concentration_1 (µg/mL)
2000
1500
1000
500
0
0
200
400
600
800
Time (hr)

Fig. 25

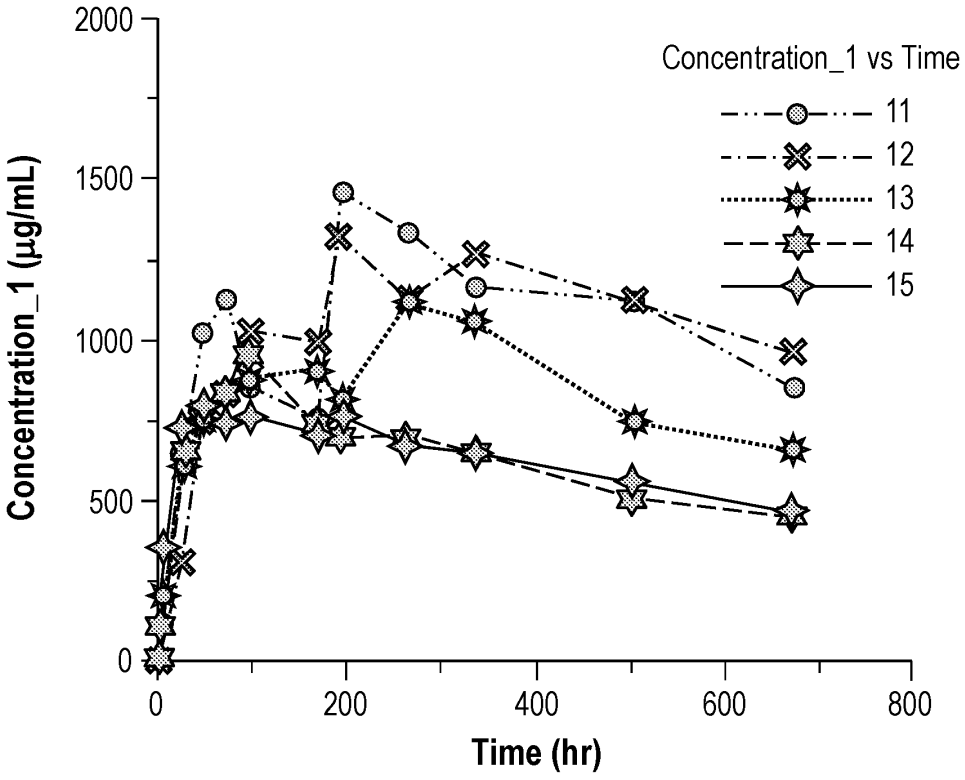

Concentration_1 vs Time
11
12
13
14
15
Concentration_1 (µg/mL)
2000
1500
1000
500
0
0
200
400
600
800
Time (hr)

Fig. 26

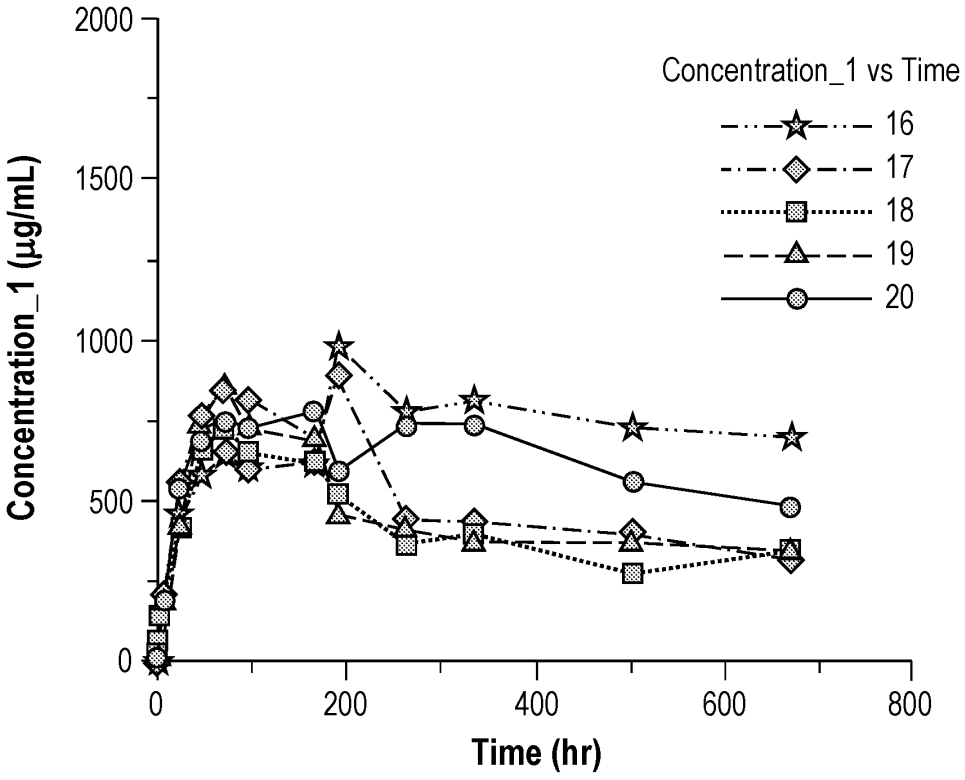

Concentration_1 vs Time
16
17
18
19
20
Concentration_1 (µg/mL)
2000
1500
1000
500
0
0
200
400
600
800
Time (hr)

Fig. 27