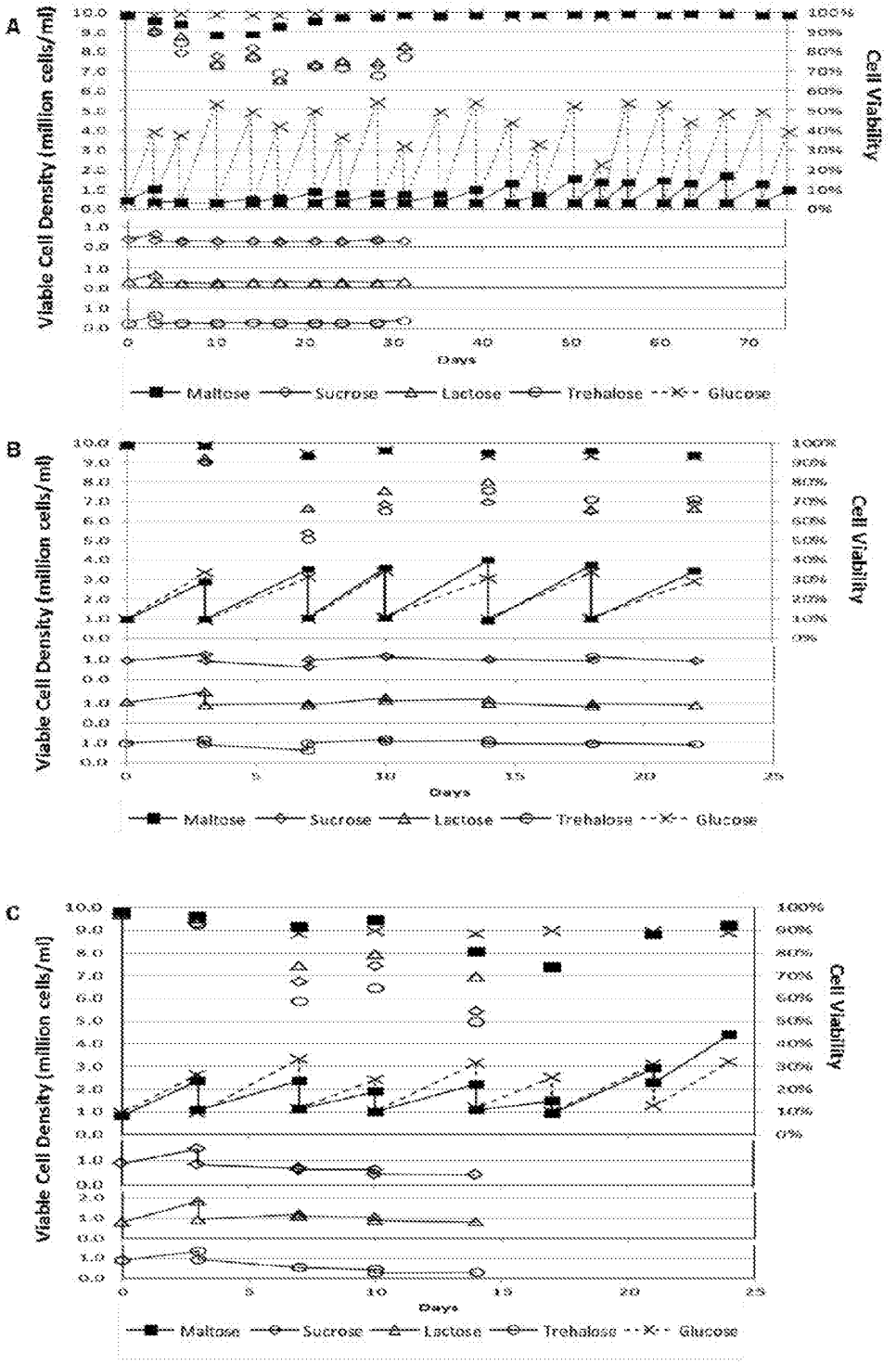

A
Viable Cell Density (million cells/ml)
Cell Viability
Days
Maltose
Sucrose
Lactose
Trehalose
Glucose
B
Viable Cell Density (million cells/ml)
Cell Viability
Days
Maltose
Sucrose
Lactose
Trehalose
Glucose
C
Viable Cell Density (million cells/ml)
Cell Viability
Days
Maltose
Sucrose
Lactose
Trehalose
Glucose

Figure 1

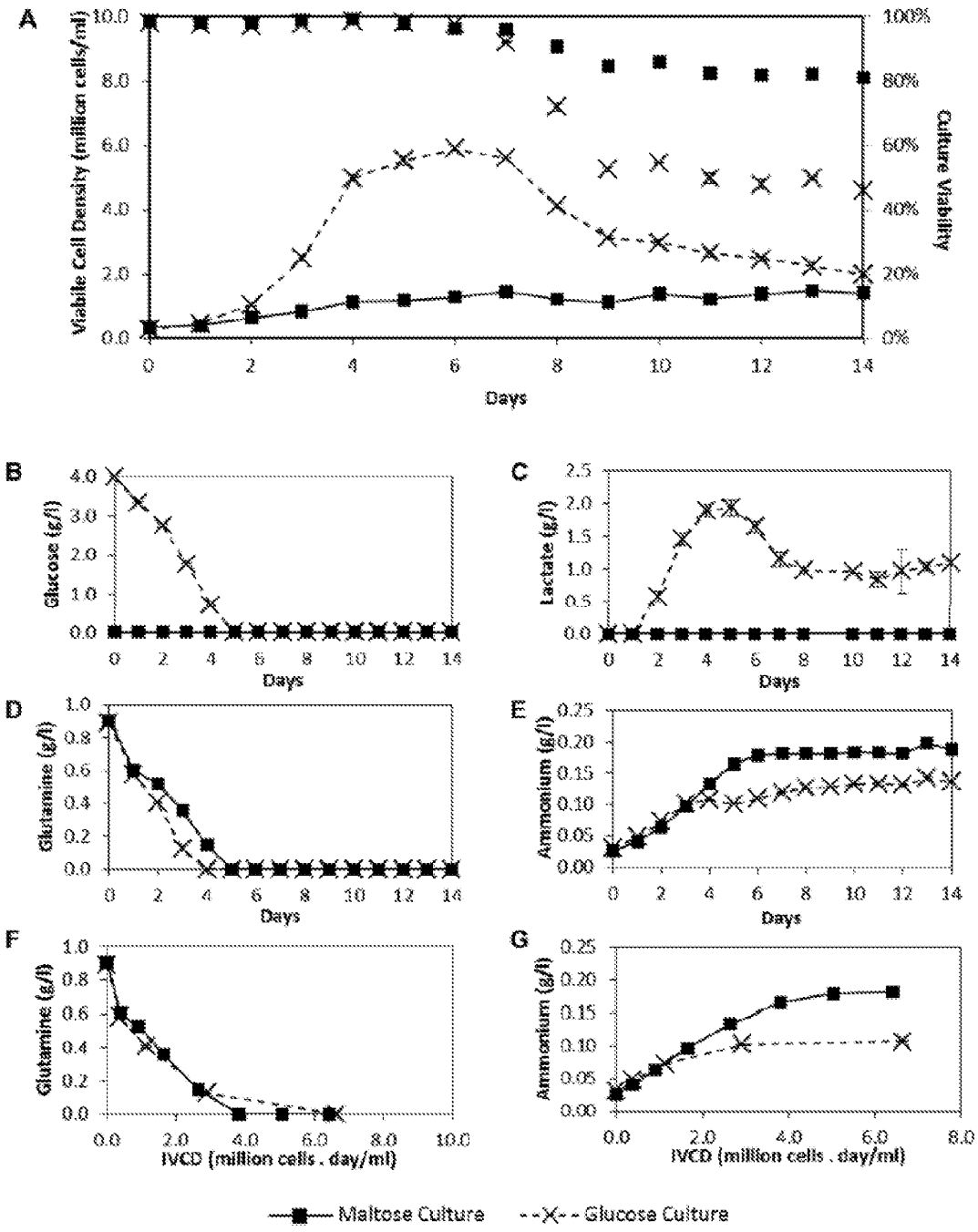

A
Viable Cell Density (million cells/ml)
Culture Viability
Days
B
Glucose (g/l)
Days
C
Lactate (g/l)
Days
D
Glutamine (g/l)
Days
E
Ammonium (g/l)
Days
F
Glutamine (g/l)
IVCD (million cells . day/ml)
G
Ammonium (g/l)
IVCD (million cells . day/ml)
Maltose Culture
Glucose Culture

Figure 2

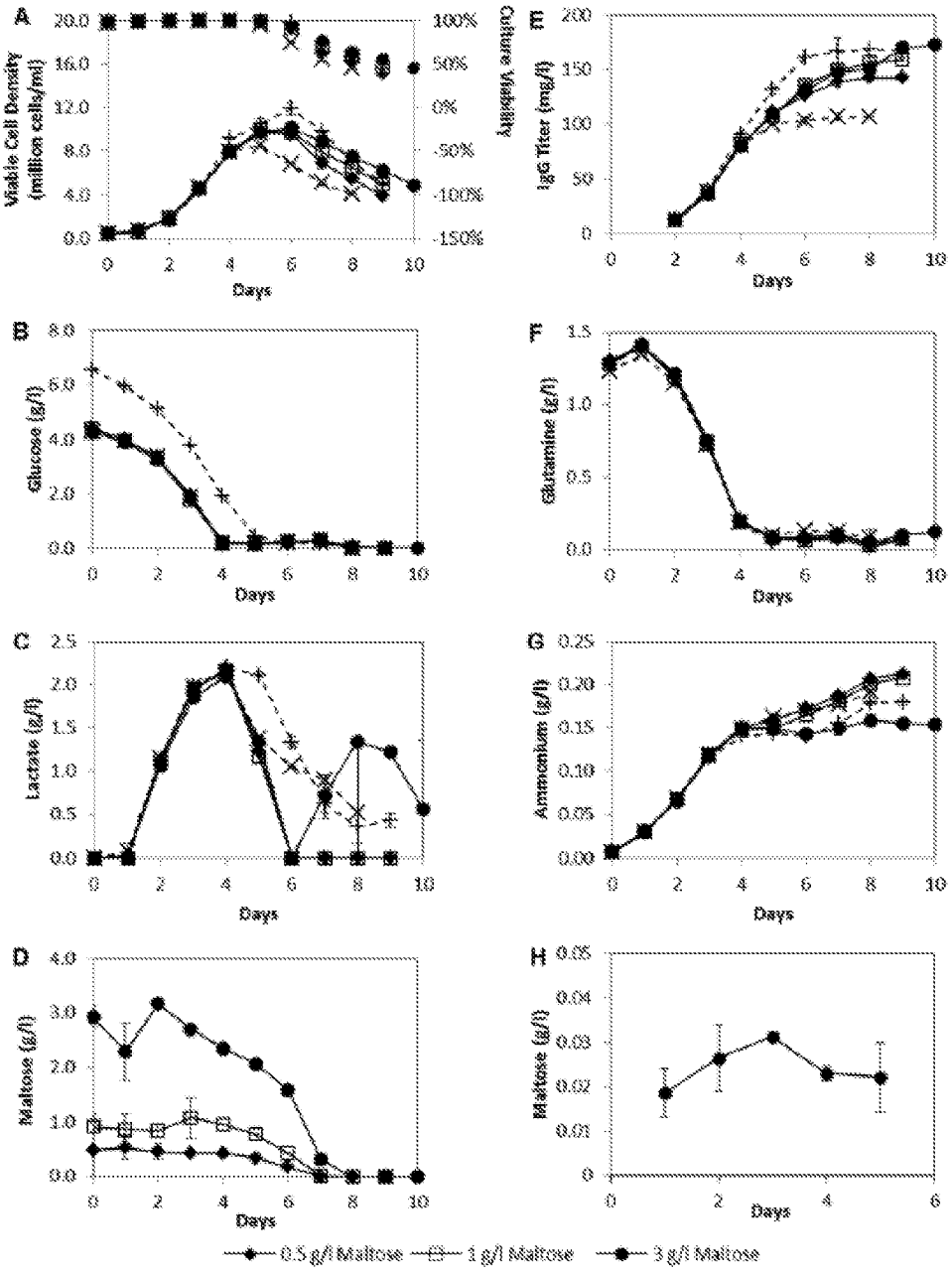

A
Viable Cell Density (million cells/ml)
Culture viability
Days
E
IgG Titer (mg/l)
Days
B
Glucose (g/l)
Days
F
Glutamine (g/l)
Days
C
Lactate (g/l)
Days
G
Ammonium (g/l)
Days
D
Maltose (g/l)
Days
H
Maltose (g/l)
Days
0.5 g/l Maltose
1 g/l Maltose
3 g/l Maltose

Figure 3

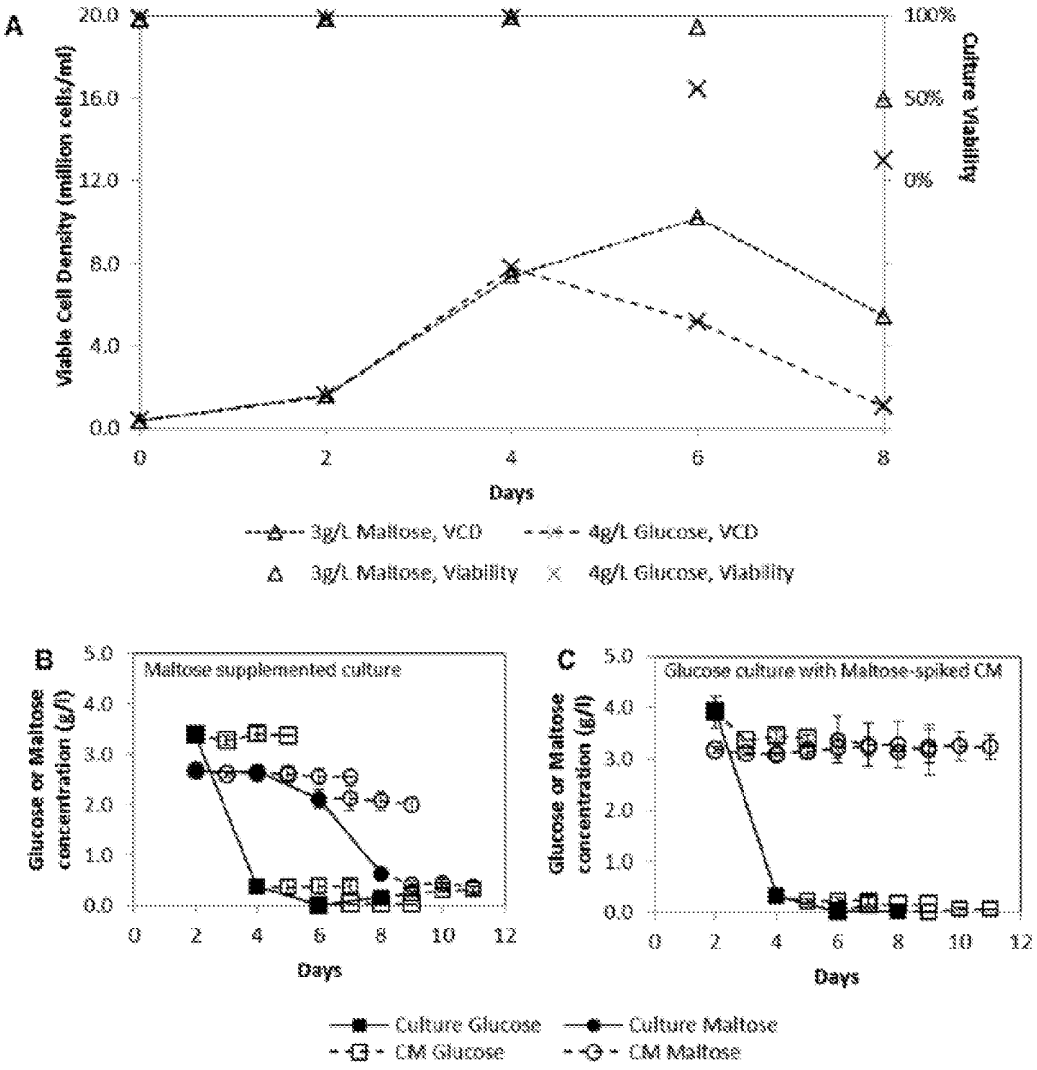

A
Viable Cell Density (million cells/ml)
Culture Viability
Days
3g/L Maltose, VCD
4g/L Glucose, VCD
3g/L Maltose, Viability
4g/L Glucose, Viability
B
Maltose supplemented culture
Glucose or Maltose concentration (g/l)
Days
C
Glucose culture with Maltose-spiked CM
Glucose or Maltose concentration (g/l)
Days
Culture Glucose
Culture Maltose
CM Glucose
CM Maltose

Figure 4

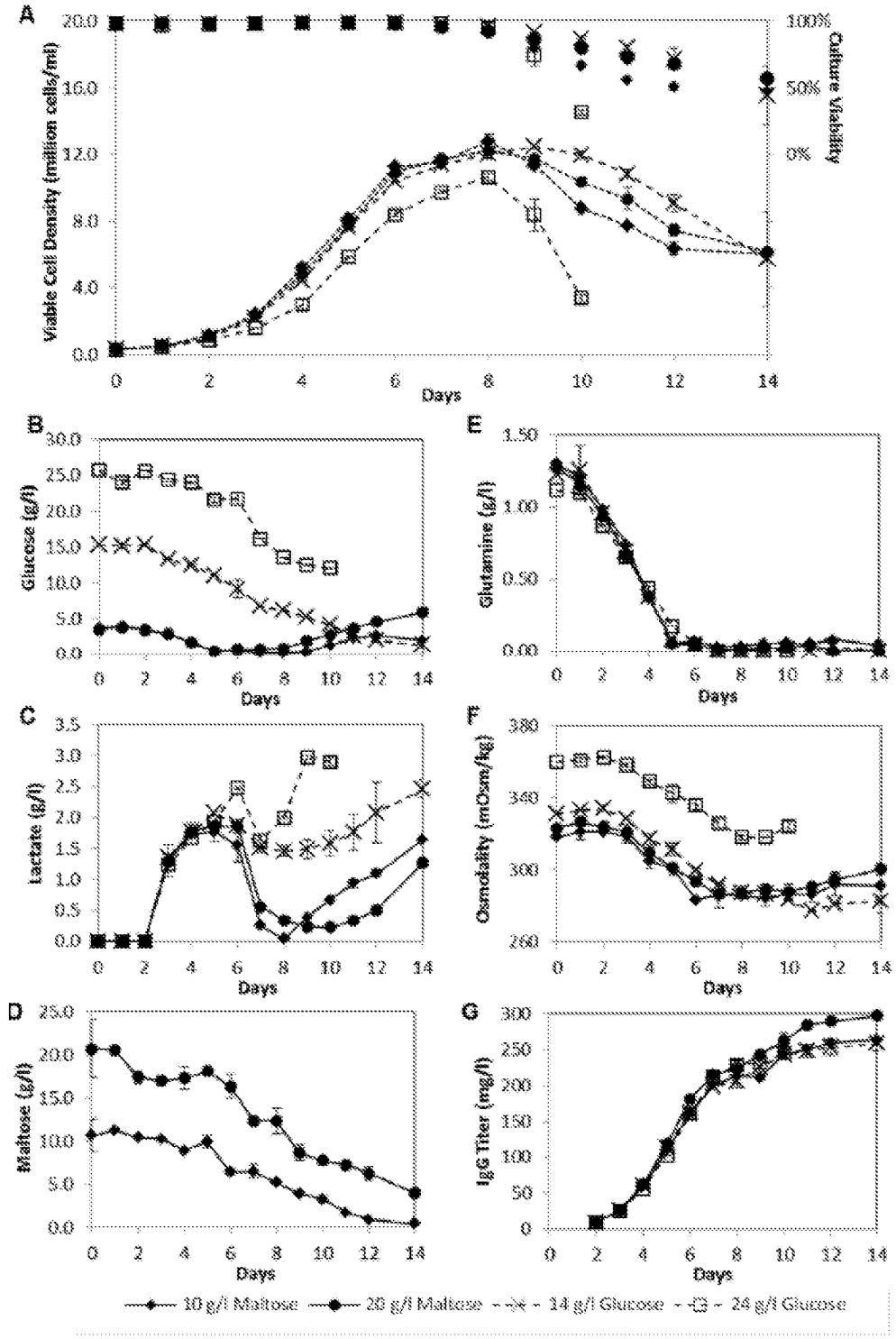

A
Viable Cell Density (million cells/ml)
Culture Viability
100%
50%
0%
Days
B
Glucose (g/l)
C
Lactate (g/l)
D
Maltose (g/l)
E
Glutamine (g/l)
F
Osmolality (mOsm/kg)
G
IgG Titer (mg/l)
10 g/l Maltose
20 g/l Maltose
14 g/l Glucose
24 g/l Glucose

Figure 5

A

Initial maltose concentrations (g/l)	0.5	1.0	2.0	3.0	10		20	
Specific maltose consumption rate, q_s (ng/cell/day)	0.0186	0.0405	0.0609	0.0821	0.1140	0.1666	0.2034	0.1884

B

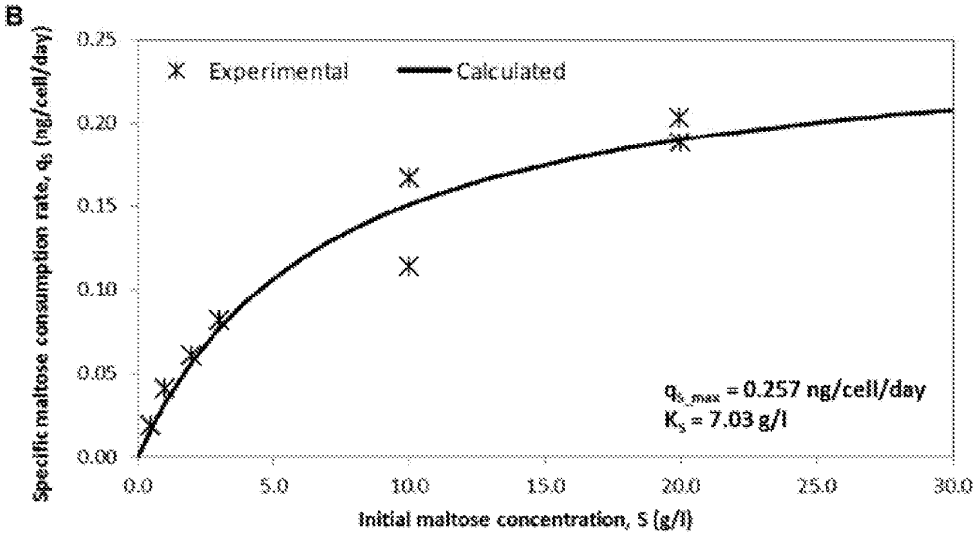


Figure 6

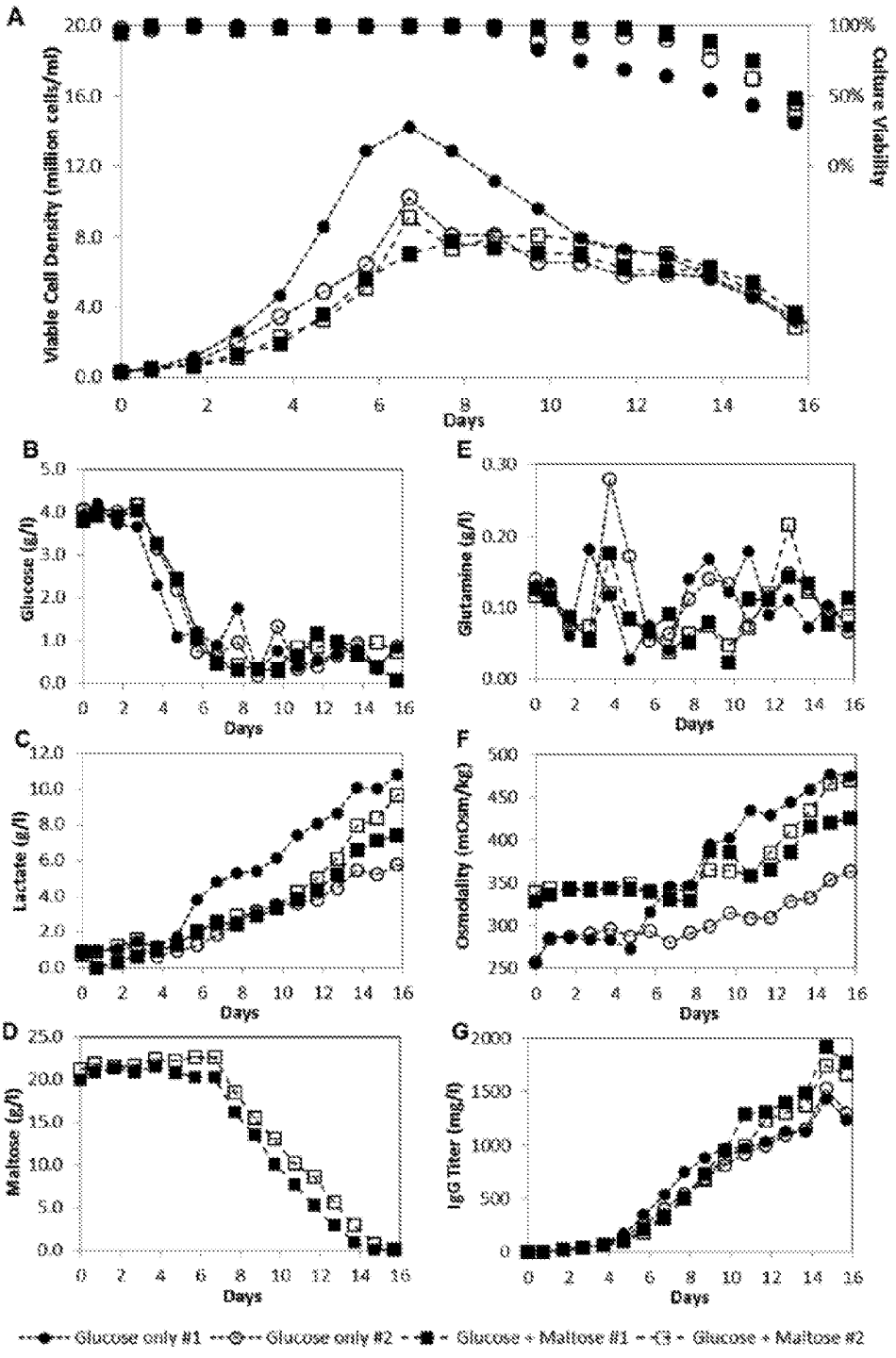
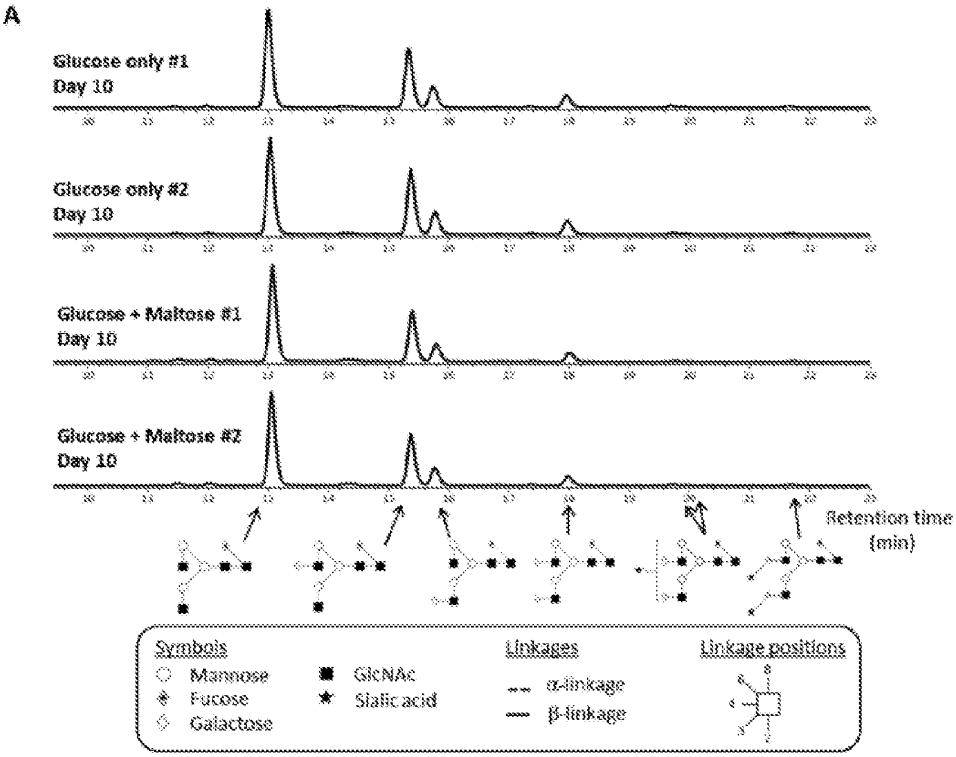

A
Viable Cell Density (million cells/ml)
Culture Viability
Days
B
Glucose (g/l)
C
Lactate (g/l)
D
Maltose (g/l)
E
Glutamine (g/l)
F
Osmolality (mOsm/kg)
G
IgG Titer (mg/l)
Glucose only #1
Glucose only #2
Glucose + Maltose #1
Glucose + Maltose #2

Figure 7

A



B

	Fucosylated Glycans		Sialylated Glycans		High-mannose Glycans	
	Average	SD	Average	SD	Average	SD
Glucose only_Day 10	98.70	0.05	2.64	0.42	0.56	0.02
Glucose + Maltose_Day 10	98.37	0.25	1.59	0.47	0.58	0.18
Glucose only_Day 15	97.54	0.25	2.10	0.41	1.34	0.23
Glucose + Maltose_Day 15	97.10	0.11	1.69	0.12	1.39	0.12
(Glucose + Maltose) - (Glucose only)	-0.39 *	0.33	-0.73 *	0.71	0.03	0.27
Day 15 - Day 10	-1.21 *	0.33	-0.22	0.71	0.80 *	0.27

	G0F		G1F		G2F	
	Average	SD	Average	SD	Average	SD
Glucose only_Day 10	46.46	1.30	41.79	1.38	6.72	0.37
Glucose + Maltose_Day 10	49.84	0.15	39.35	0.18	5.47	0.07
Glucose only_Day 15	52.93	0.20	35.38	0.48	5.32	0.15
Glucose + Maltose_Day 15	54.76	0.52	33.11	0.37	4.40	0.26
(Glucose + Maltose) - (Glucose only)	2.58 *	1.09	-2.36 *	1.21	-1.08 *	0.43
Day 15 - Day 10	5.72 **	1.09	-6.32 **	1.21	-1.24 **	0.43

	Antennary 1		Antennary 2	
	Average	SD	Average	SD
Glucose only_Day 10	1.16	0.08	98.10	0.15
Glucose + Maltose_Day 10	2.26	0.03	96.66	0.15
Glucose only_Day 15	1.91	0.18	96.27	0.48
Glucose + Maltose_Day 15	3.82	0.34	94.85	0.23
(Glucose + Maltose) - (Glucose only)	1.50 *	0.32	-1.41 **	0.50
Day 15 - Day 10	1.16 *	0.32	-1.84 **	0.50

* $p < 0.05$
** $p < 0.005$
· $p = 0.055$

Figure 8

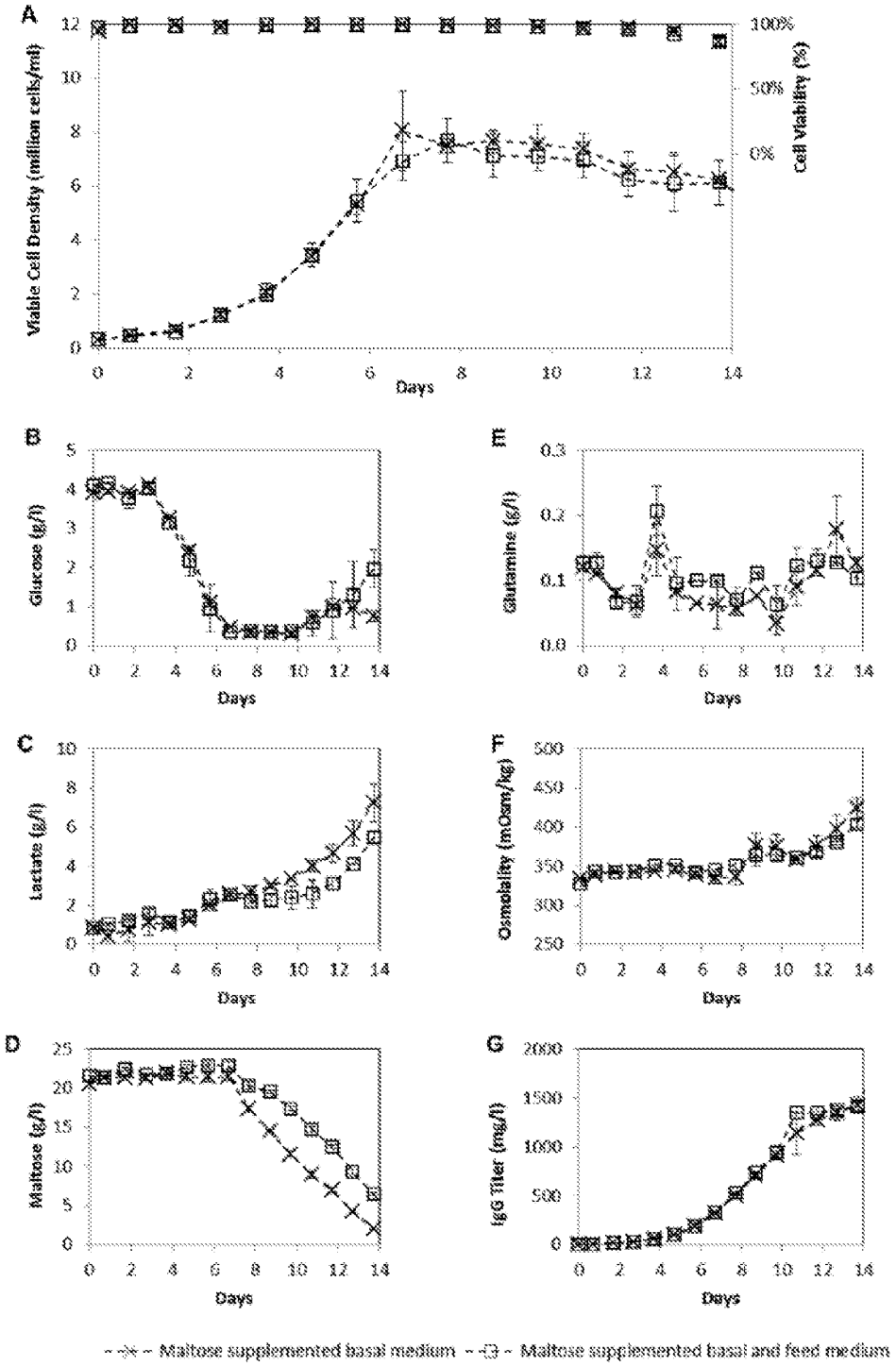

A
Viable Cell Density (million cells/ml)
Cell Viability (%)
Days
B
Glucose (g/l)
Days
E
Glutamine (g/l)
Days
C
Lactate (g/l)
Days
F
Osmolality (mOsm/kg)
Days
D
Maltose (g/l)
Days
G
IgG Titer (mg/l)
Days
Maltose supplemented basal medium
Maltose supplemented basal and feed medium

Figure 9

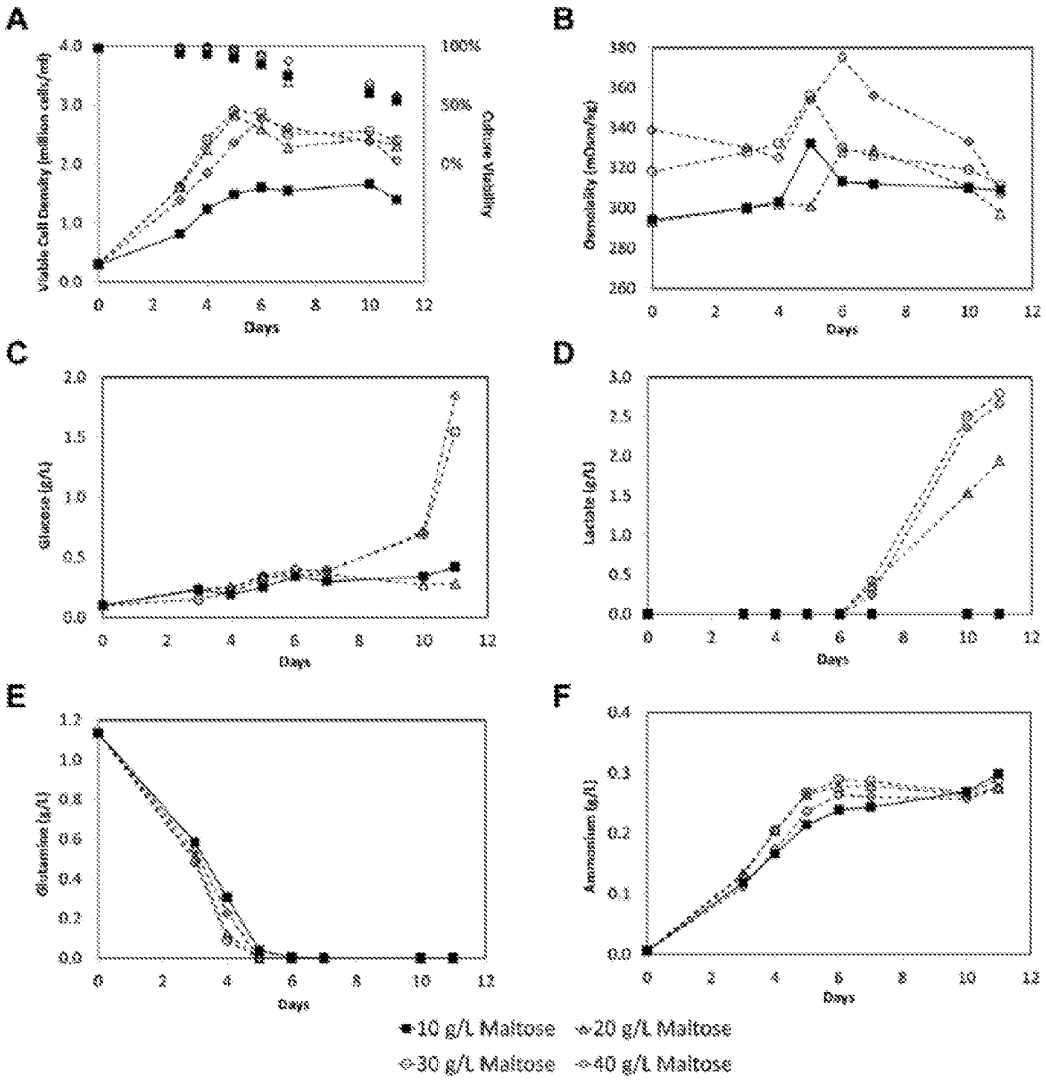

A
Viable Cell Density (million cells/ml)
Culture Viability
100%
50%
0%
Days
B
Osmolality (mOsm/kg)
Days
C
Glucose (g/L)
Days
D
Lactate (g/L)
Days
E
Glutamine (g/L)
Days
F
Ammonium (g/L)
Days
10 g/L Maltose
20 g/L Maltose
30 g/L Maltose
40 g/L Maltose

Figure 10

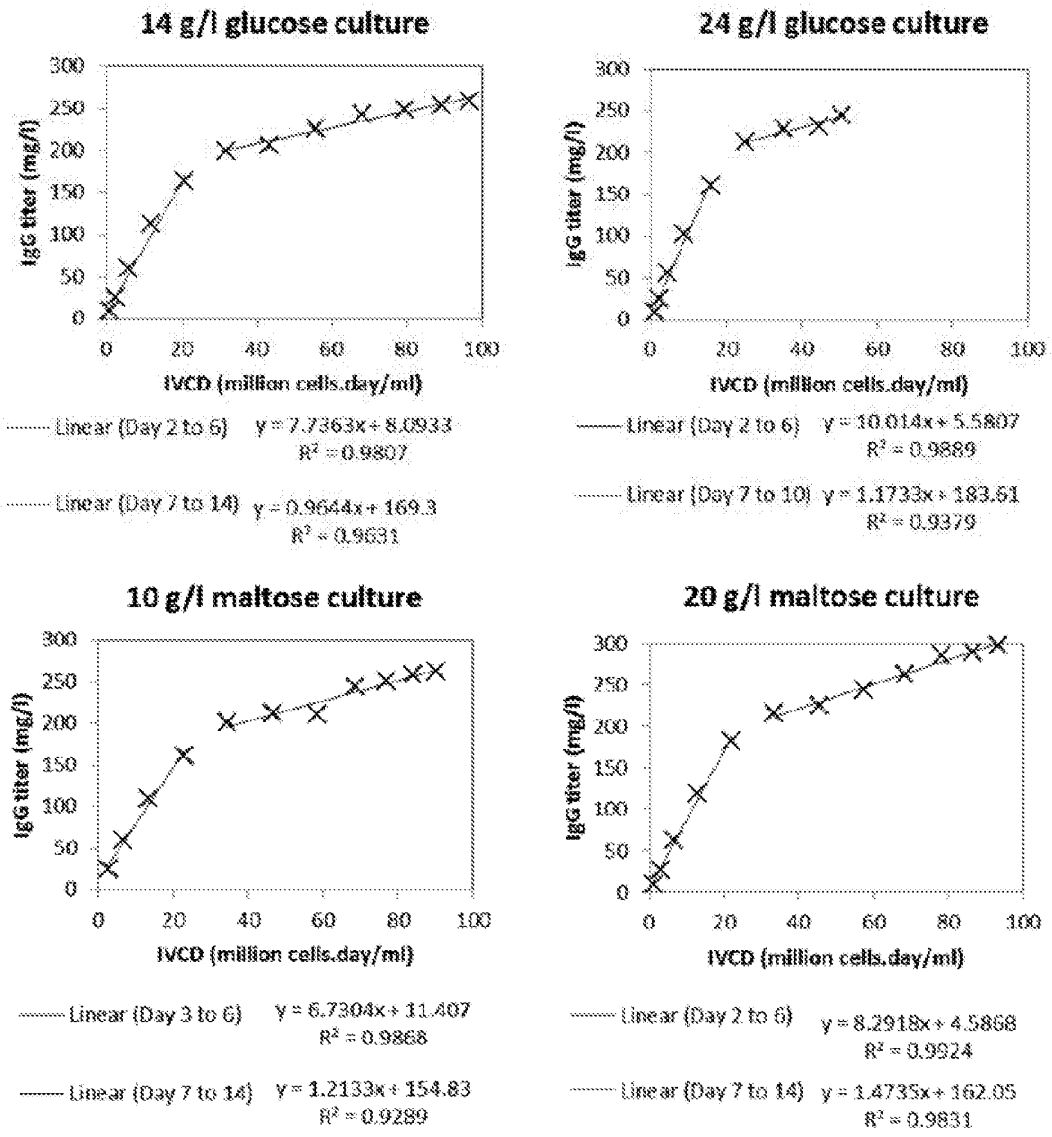

14 g/l glucose culture
IgG titer (mg/l)
IVCD (million cells.day/ml)
Linear (Day 2 to 6) y = 7.7363x + 8.0933 R² = 0.9807
Linear (Day 7 to 14) y = 0.9644x + 169.3 R² = 0.9631
24 g/l glucose culture
IgG titer (mg/l)
IVCD (million cells.day/ml)
Linear (Day 2 to 6) y = 10.014x + 5.5807 R² = 0.9889
Linear (Day 7 to 10) y = 1.1733x + 183.61 R² = 0.9379
10 g/l maltose culture
IgG titer (mg/l)
IVCD (million cells.day/ml)
Linear (Day 3 to 6) y = 8.7304x + 11.407 R² = 0.9868
Linear (Day 7 to 14) y = 1.2133x + 154.83 R² = 0.9289
20 g/l maltose culture
IgG titer (mg/l)
IVCD (million cells.day/ml)
Linear (Day 2 to 6) y = 8.2918x + 4.5868 R² = 0.9924
Linear (Day 7 to 14) y = 1.4735x + 162.05 R² = 0.9831

Figure 11

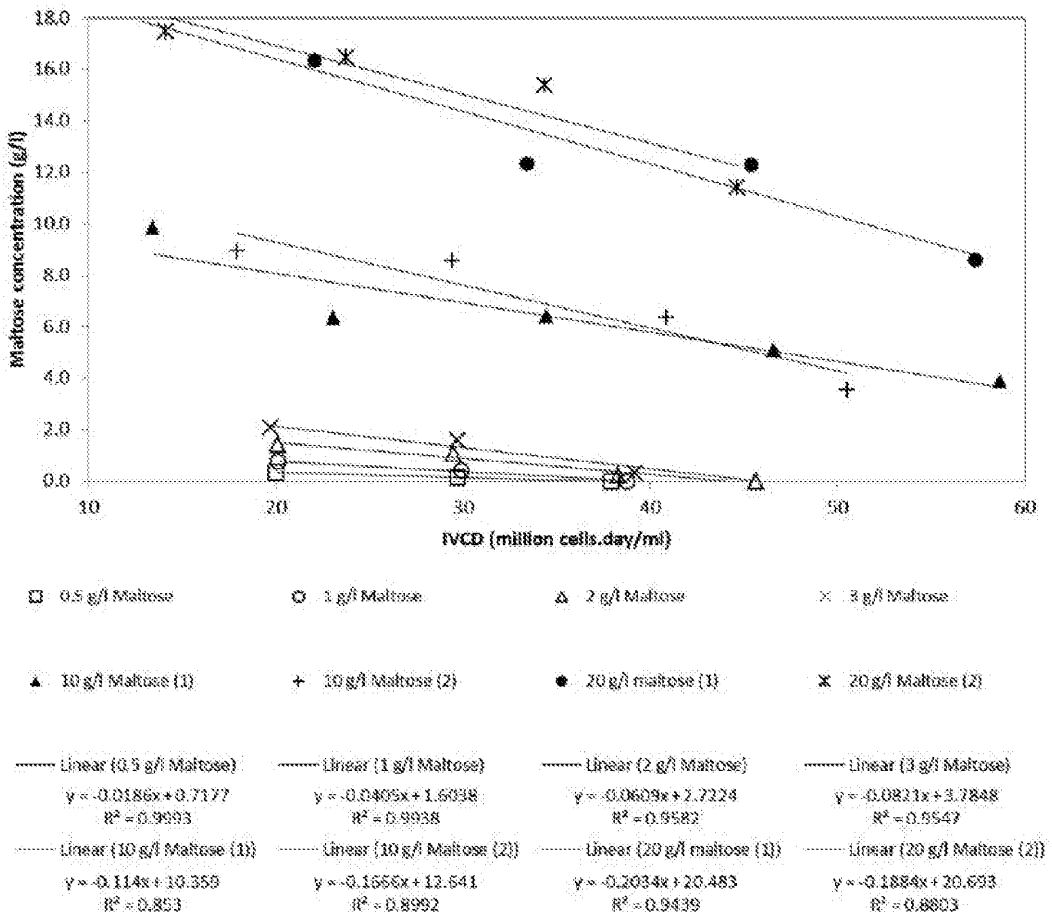

18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
Maltose concentration (g/l)
10
20
30
40
50
60
IVCD (million cells.day/ml)
0.5 g/l Maltose
1 g/l Maltose
2 g/l Maltose
3 g/l Maltose
10 g/l Maltose (1)
10 g/l Maltose (2)
20 g/l maltose (1)
20 g/l Maltose (2)
Linear (0.5 g/l Maltose)
y = -0.0186x + 0.7177
R² = 0.9993
Linear (1 g/l Maltose)
y = -0.0405x + 1.6038
R² = 0.9938
Linear (2 g/l Maltose)
y = -0.0609x + 2.7324
R² = 0.9582
Linear (3 g/l Maltose)
y = -0.0821x + 3.7848
R² = 0.9547
Linear (10 g/l Maltose (1))
y = -0.114x + 10.359
R² = 0.853
Linear (10 g/l Maltose (2))
y = -0.1666x + 12.641
R² = 0.8992
Linear (20 g/l maltose (1))
y = -0.2034x + 20.483
R² = 0.9439
Linear (20 g/l Maltose (2))
y = -0.1884x + 20.693
R² = 0.8803

Figure 12

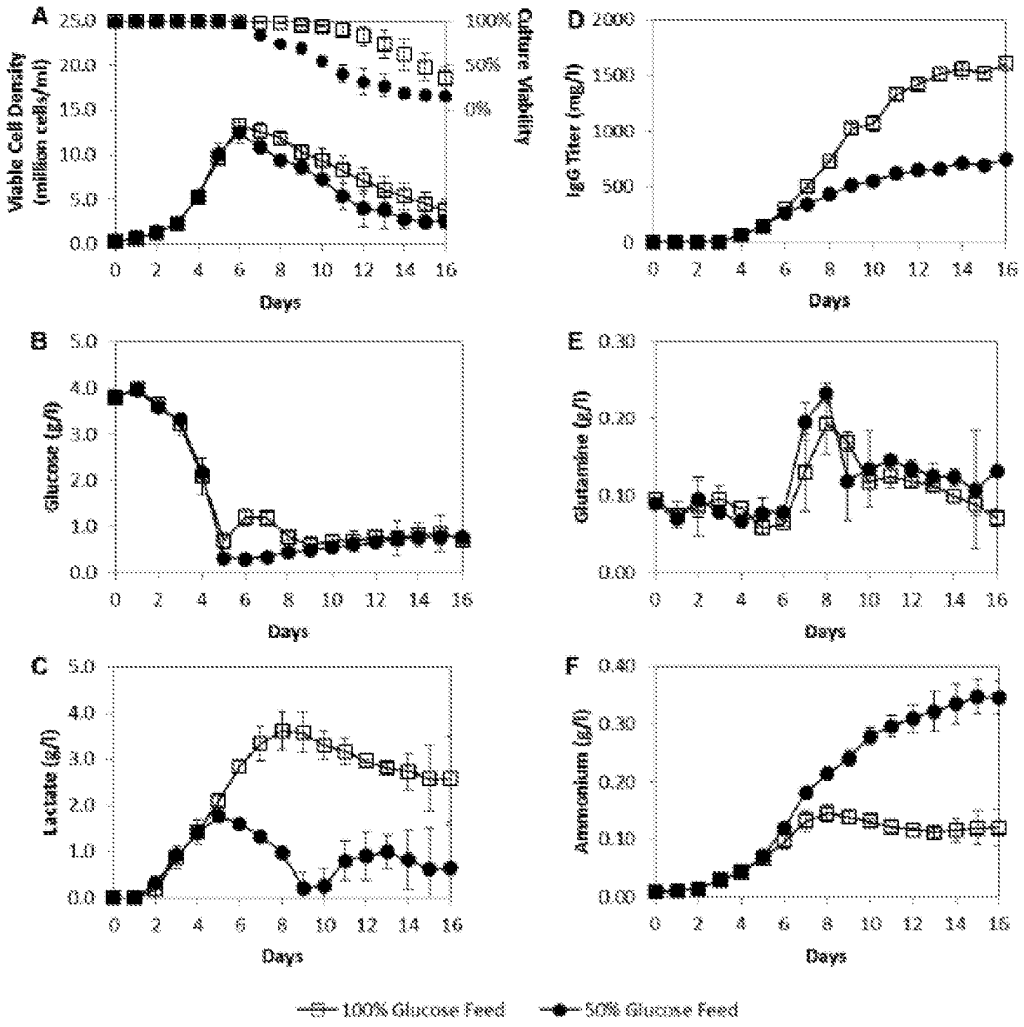

A
Viable Cell Density (million cells/ml)
Culture Viability
100%
50%
0%
Days
D
IgG Titer (mg/l)
Days
B
Glucose (g/l)
Days
E
Glutamine (g/l)
Days
C
Lactate (g/l)
Days
F
Ammonium (g/l)
Days
100% Glucose Feed
50% Glucose Feed

Figure 13