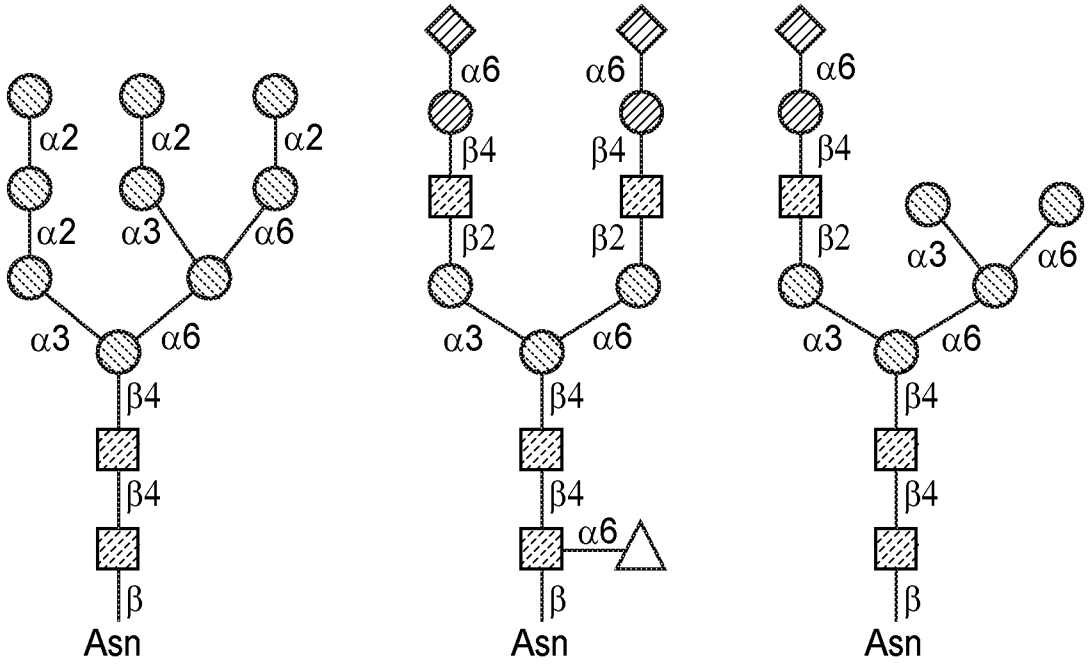


Symbolic Representations of Common Monosaccharides and Linkages

- Galactose (Gal)
- *N*-Acetylgalactosamine (GalNAc)
- Galactosamine (GalN)
- Glucose (Glc)
- *N*-Acetylglucosamine (GlcNAc)
- Glucosamine (GlcN)
- Mannose (Man)
- *N*-Acetylmannosamine (ManNAc)
- Mannosamine (ManN)
- Xylose (Xyl)
- *N*-Acetylneuraminic (Neu5Ac)
- *N*-Glycolylneuraminic acid (Neu5Gc)
- 2-Keto-3-deoxynononic acid (Kdn)
- Fucose (Fuc)
- Glucuronic acid (GlcA)
- Iduronic acid (IdoA)
- Galacturonic acid (GalA)
- Mannuronic acid (ManA)

Other Monosaccharides

User letter designation inside symbol to specify if needed A

FIGURE 1A

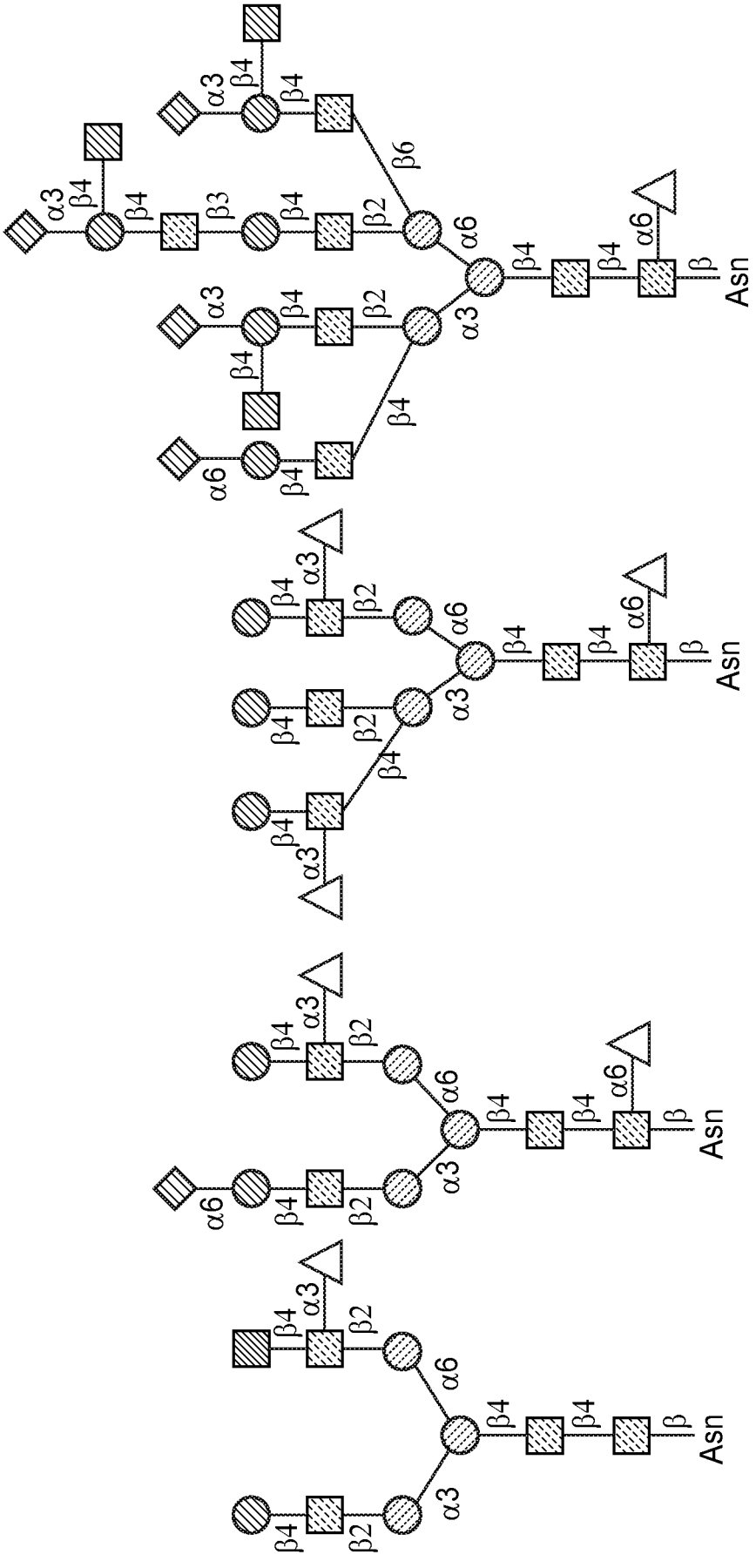

α3
β4
β4
β3
β4
β2
β6
α6
β4
β4
α6
β
Asn
α3
β4
β2
β4
α6
α3
β4
β4
α6
β
Asn
α3
β4
β2
α6
β4
β4
α6
β
Asn
α3
β4
β2
α6
β4
β4
α6
β
Asn

FIGURE 1B

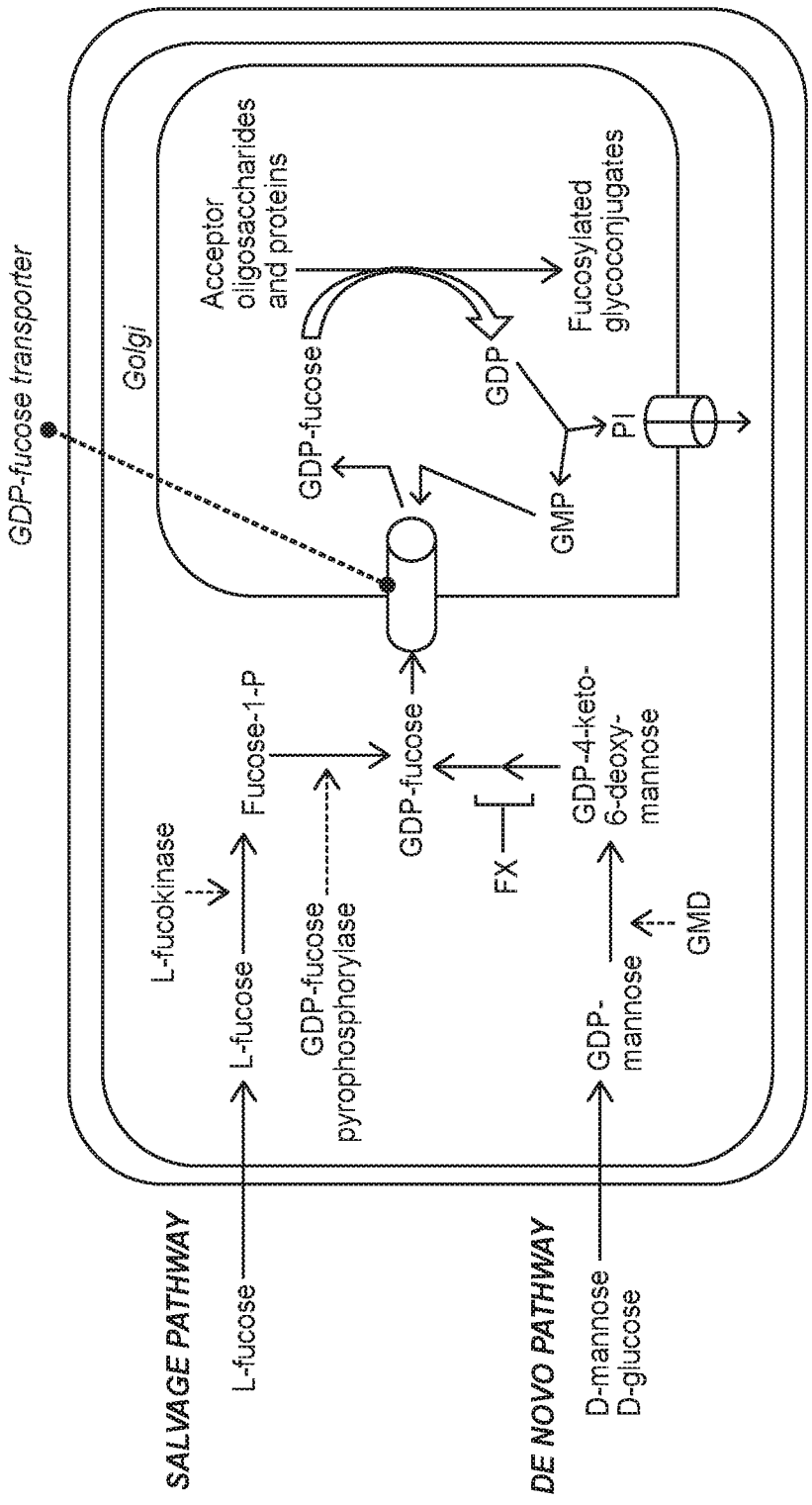

GDP-fucose transporter
Golgi
Acceptor oligosaccharides and proteins
Fucosylated glycoconjugates
GDP-fucose
GDP
PI
GMP
L-fucokinase
Fucose-1-P
L-fucose
GDP-fucose pyrophosphorylase
GDP-fucose
FX
GDP-4-keto-6-deoxy-mannose
GDP-mannose
GMD
SALVAGE PATHWAY
L-fucose
DE NOVO PATHWAY
D-mannose
D-glucose

FIGURE 2

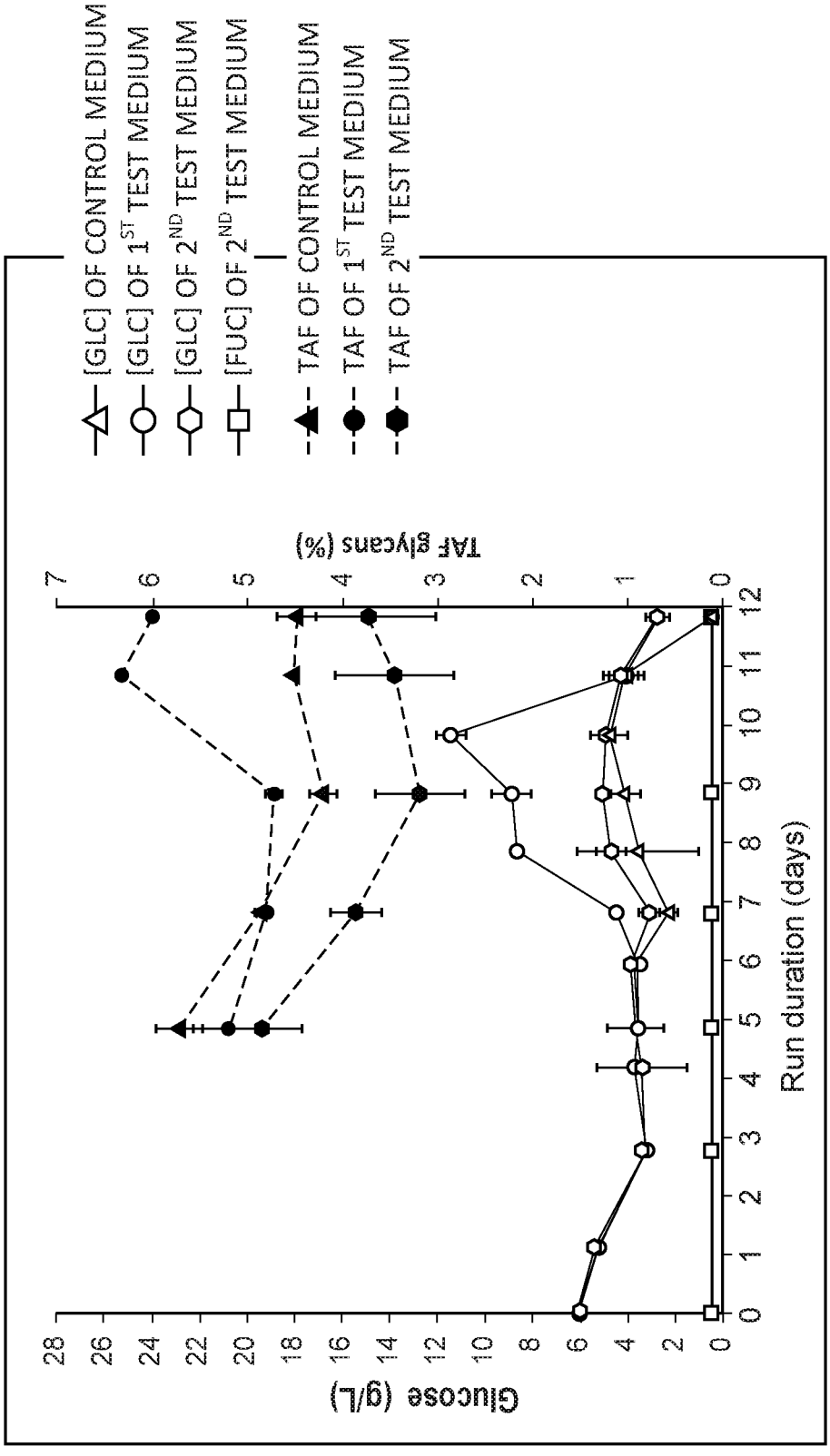

[GLC] OF CONTROL MEDIUM
[GLC] OF 1ST TEST MEDIUM
[GLC] OF 2ND TEST MEDIUM
[FUC] OF 2ND TEST MEDIUM
TAF OF CONTROL MEDIUM
TAF OF 1ST TEST MEDIUM
TAF OF 2ND TEST MEDIUM
Glucose (g/L)
TAF glycans (%)
Run duration (days)

FIGURE 3

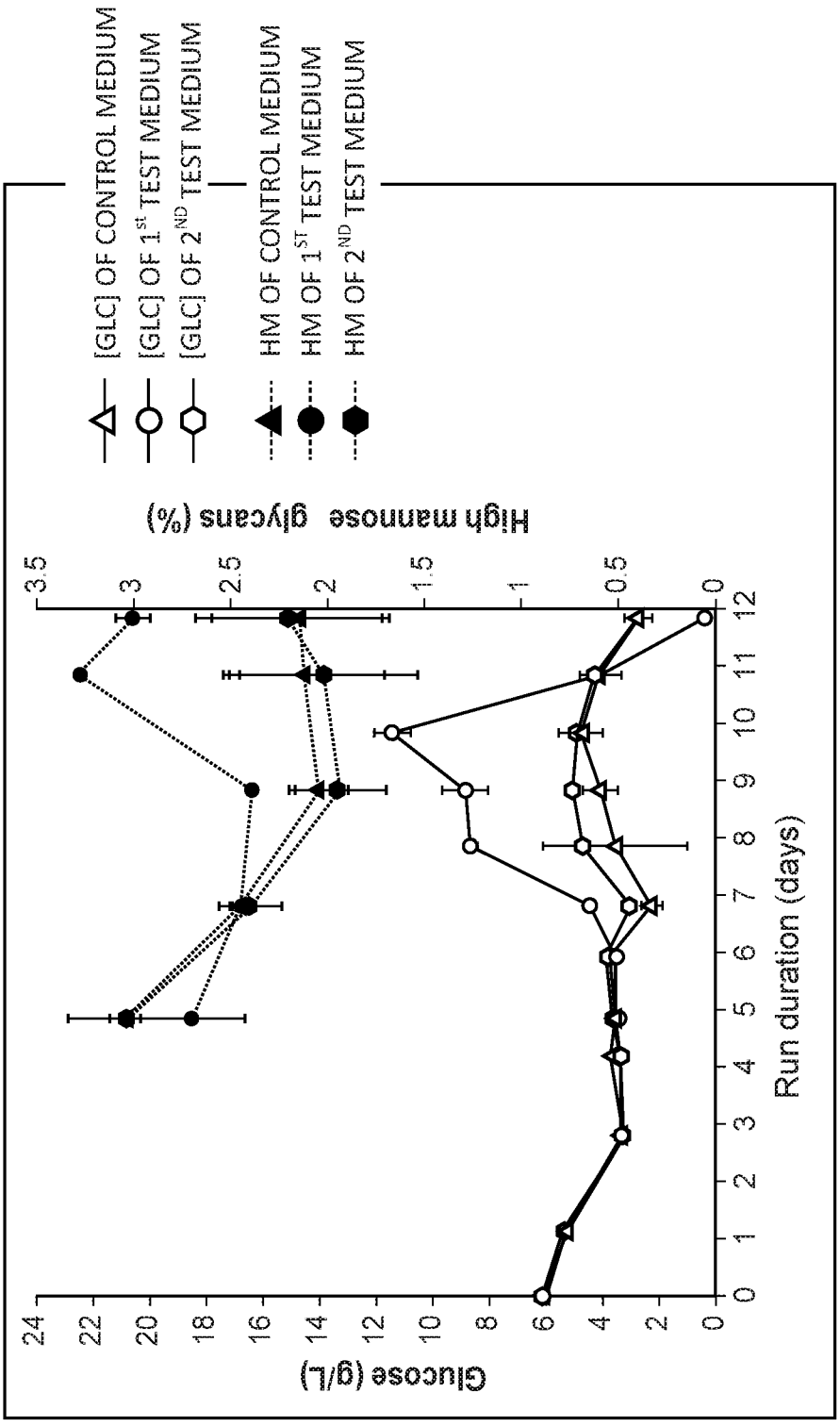

[GLC] OF CONTROL MEDIUM
[GLC] OF 1ST TEST MEDIUM
[GLC] OF 2ND TEST MEDIUM
HM OF CONTROL MEDIUM
HM OF 1ST TEST MEDIUM
HM OF 2ND TEST MEDIUM
High mannose glycans (%)
Glucose (g/L)
Run duration (days)
0
0.5
1
1.5
2
2.5
3
3.5
0
2
4
6
8
10
12
14
16
18
20
22
24
0 1 2 3 4 5 6 7 8 9 10 11 12

FIGURE 4

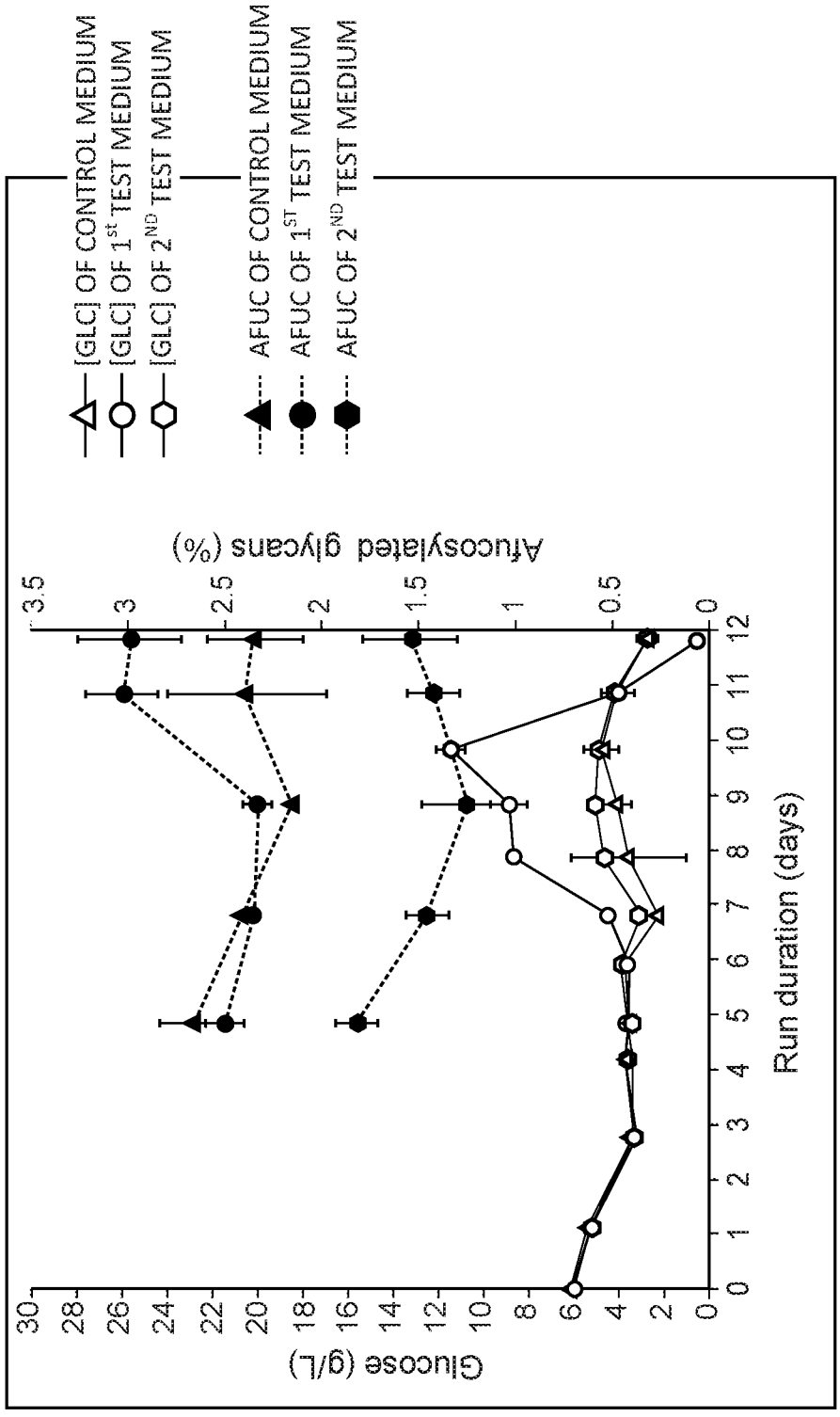

[GLC] OF CONTROL MEDIUM
[GLC] OF 1ST TEST MEDIUM
[GLC] OF 2ND TEST MEDIUM
AFUC OF CONTROL MEDIUM
AFUC OF 1ST TEST MEDIUM
AFUC OF 2ND TEST MEDIUM
Afucosylated glycans (%)
Glucose (g/L)
Run duration (days)

FIGURE 5

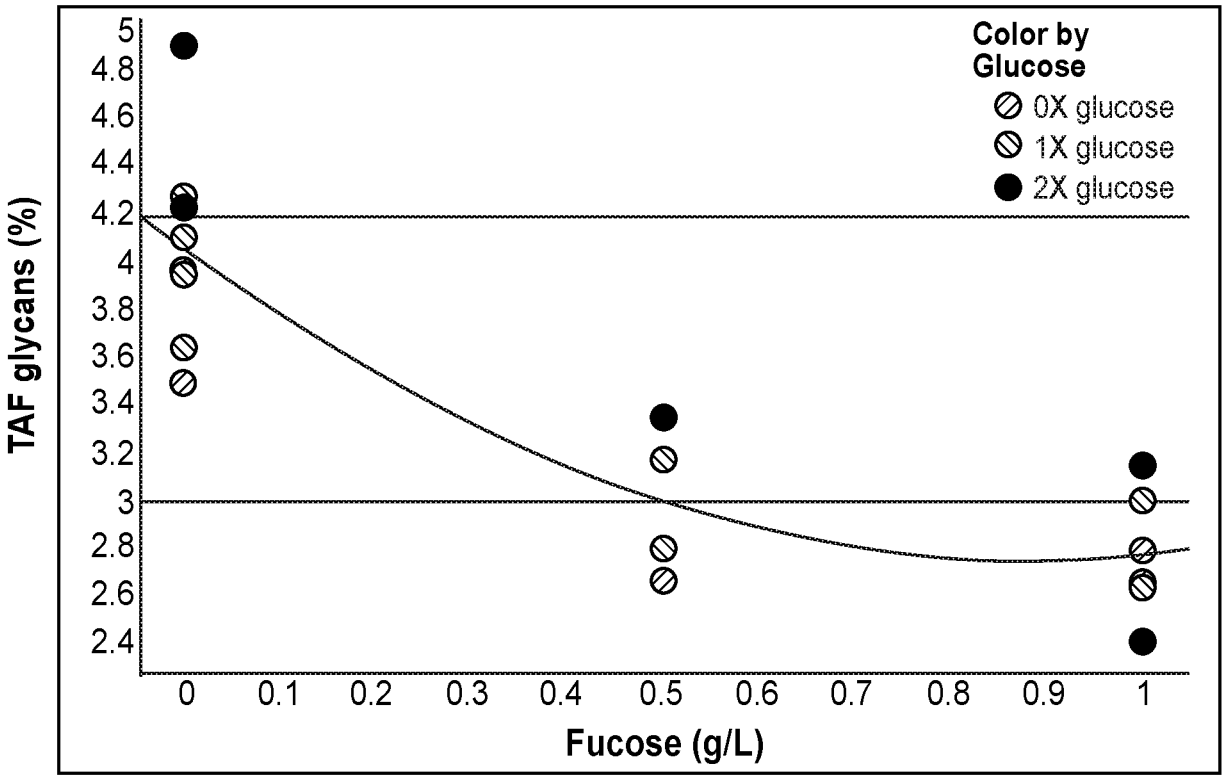

TAF glycans (%)
5
4.8
4.6
4.4
4.2
4
3.8
3.6
3.4
3.2
3
2.8
2.6
2.4
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Fucose (g/L)
Color by Glucose
0X glucose
1X glucose
2X glucose

FIGURE 6

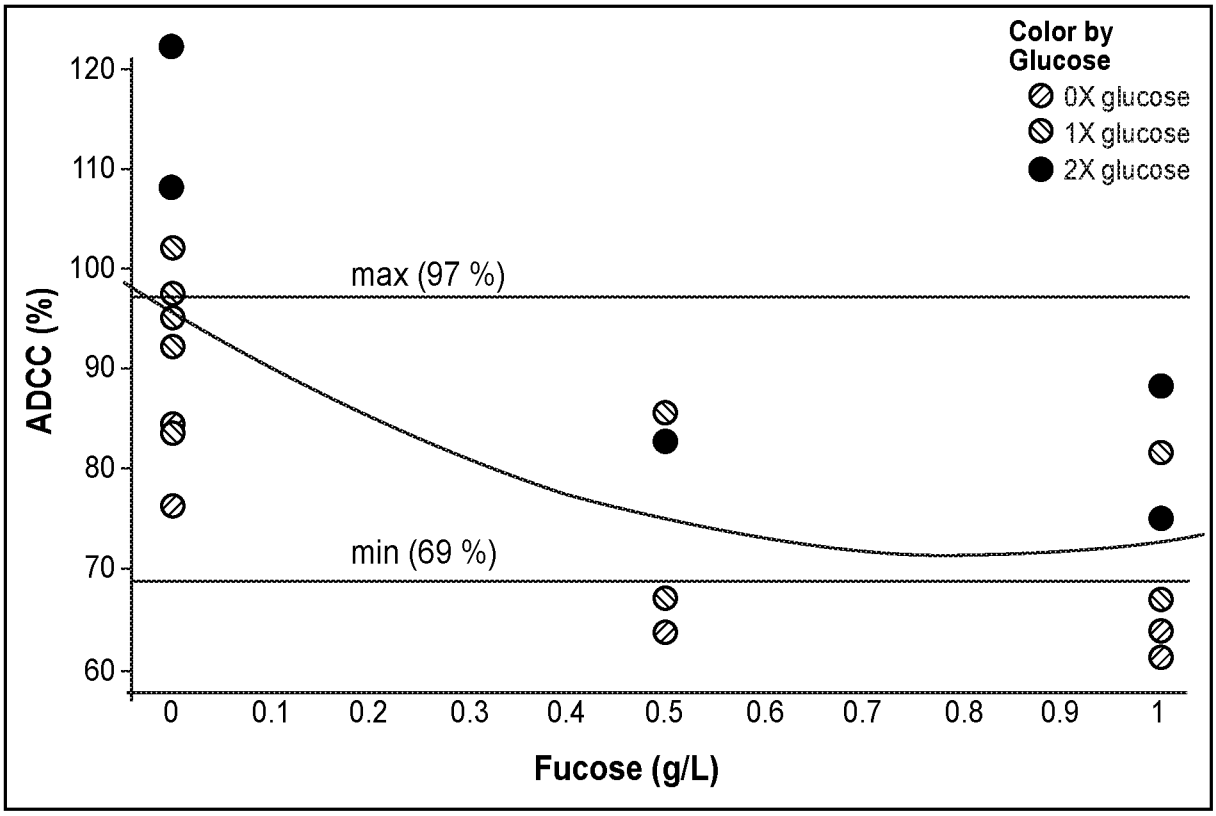
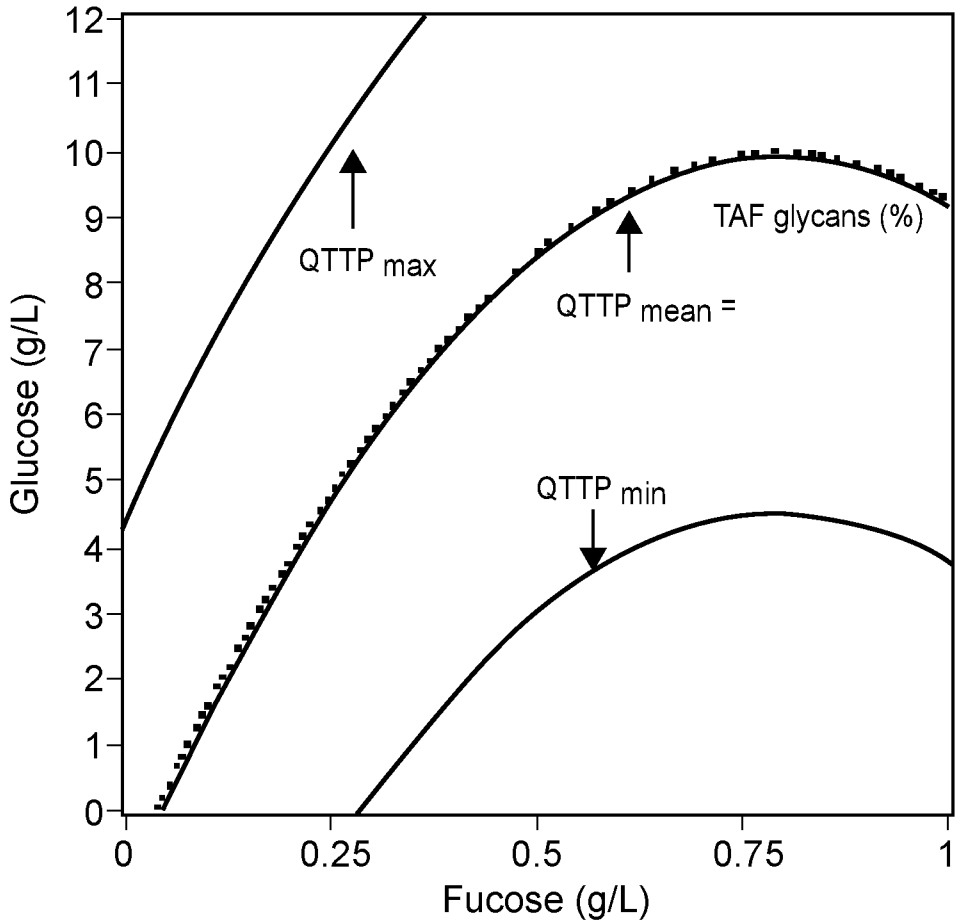

Color by Glucose
0X glucose
1X glucose
2X glucose
max (97 %)
min (69 %)
ADCC (%)
120
110
100
90
80
70
60
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Fucose (g/L)

FIGURE 7



$$TAF\ glycans\ (\%) = 3.354 - 1.388 * fucose\left(\frac{g}{L}\right) + 0.111 * glucose\left(\frac{g}{L}\right) + [fucose\left(\frac{g}{L}\right) - 0.4375] * [[fucose\left(\frac{g}{L}\right) - 0.4375] * 1.9527]$$

FIGURE 8

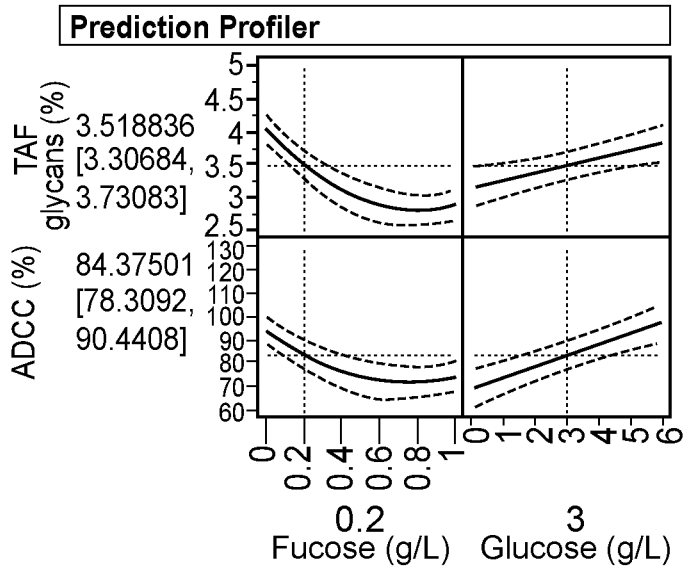


FIGURE 9A

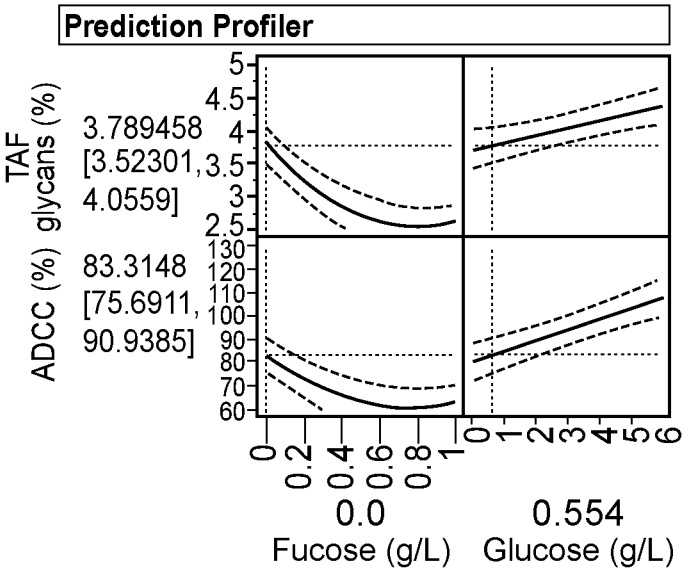


FIGURE 9B

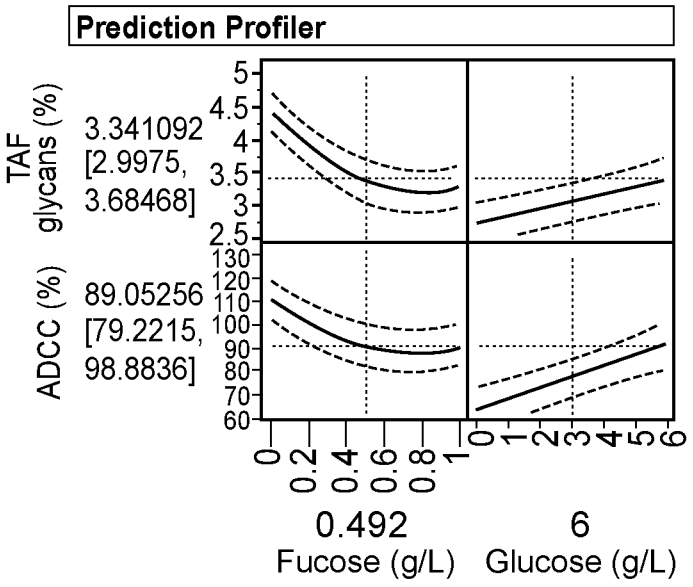


FIGURE 9C

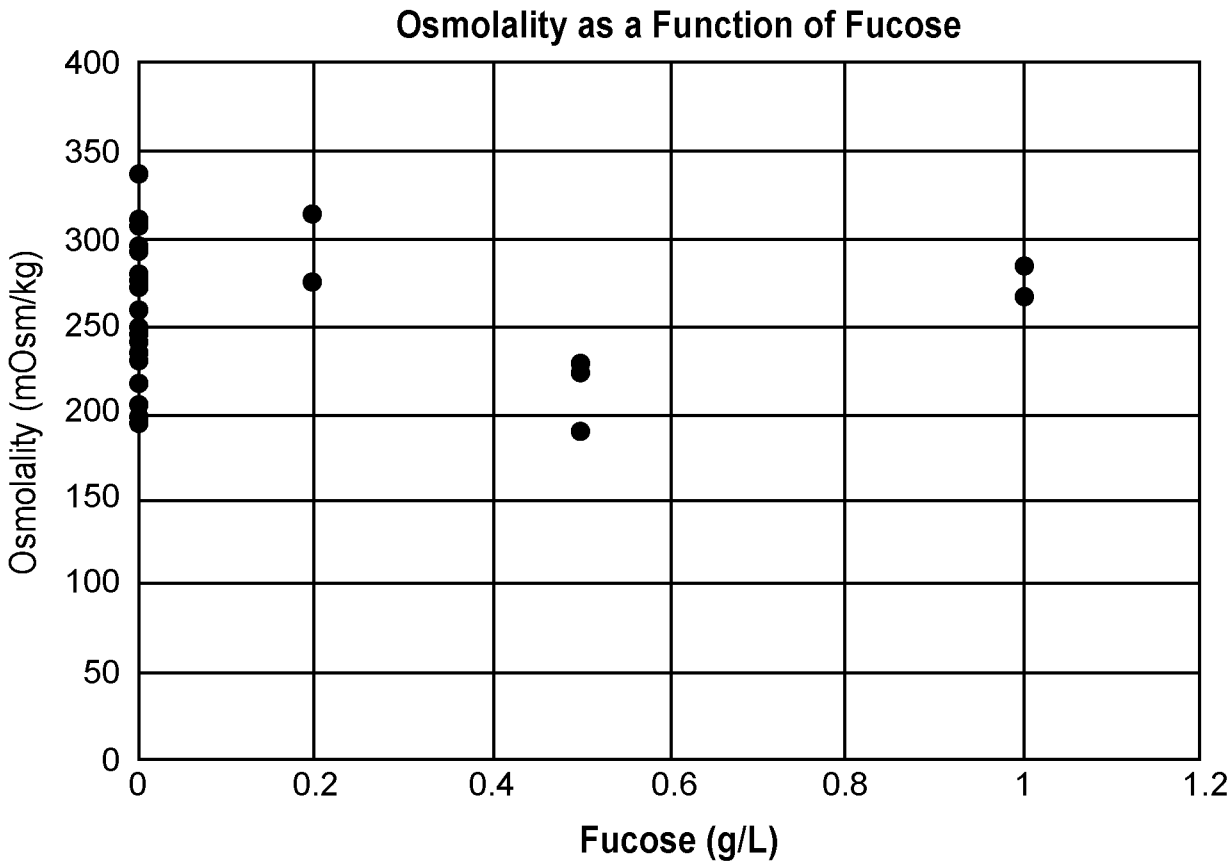

Osmolality as a Function of Fucose
Osmolality (mOsm/kg)
400
350
300
250
200
150
100
50
0
0
0.2
0.4
0.6
0.8
1
1.2
Fucose (g/L)

FIGURE 10

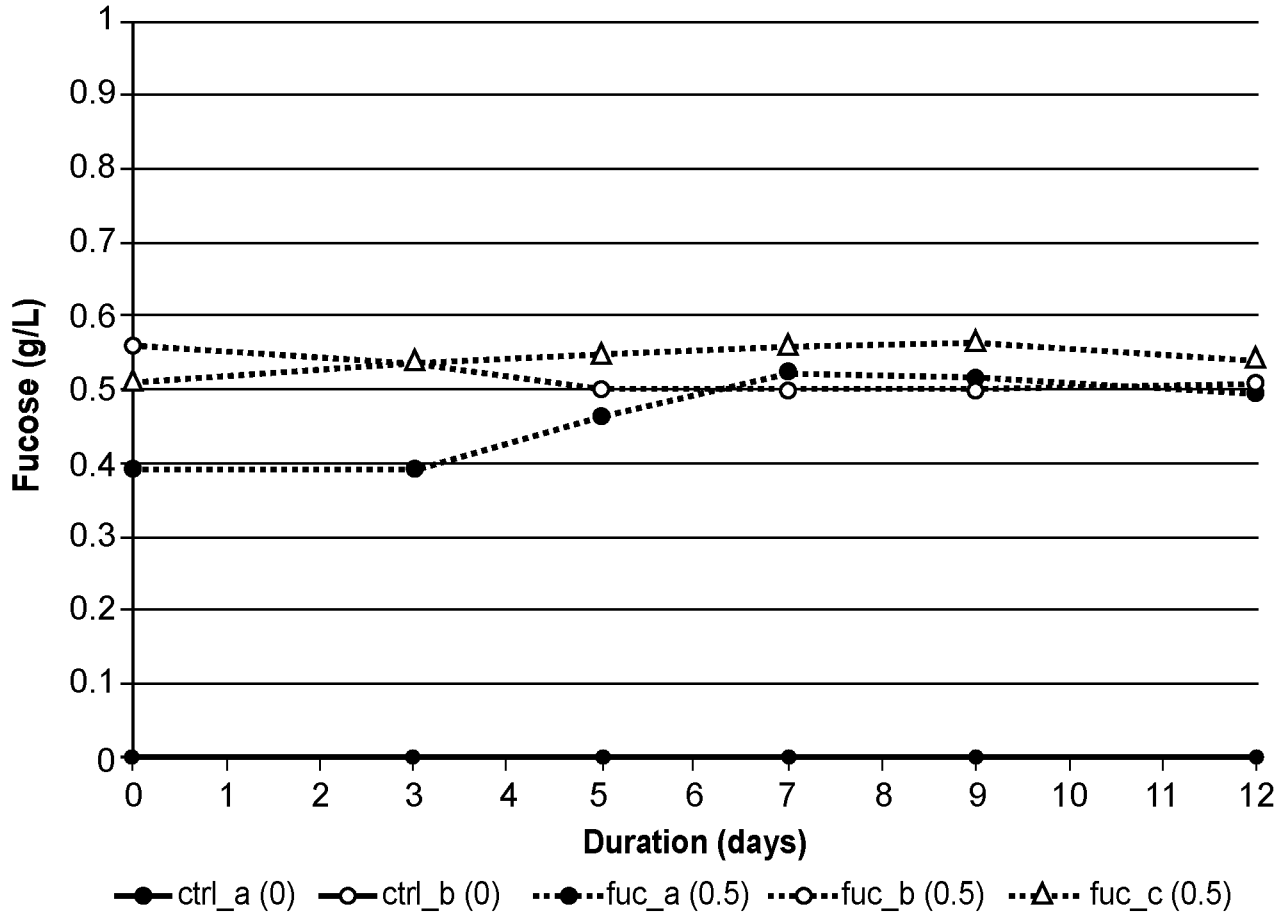

1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Fucose (g/L)
0 1 2 3 4 5 6 7 8 9 10 11 12
Duration (days)
ctrl_a (0)
ctrl_b (0)
fuc_a (0.5)
fuc_b (0.5)
fuc_c (0.5)

FIGURE 11

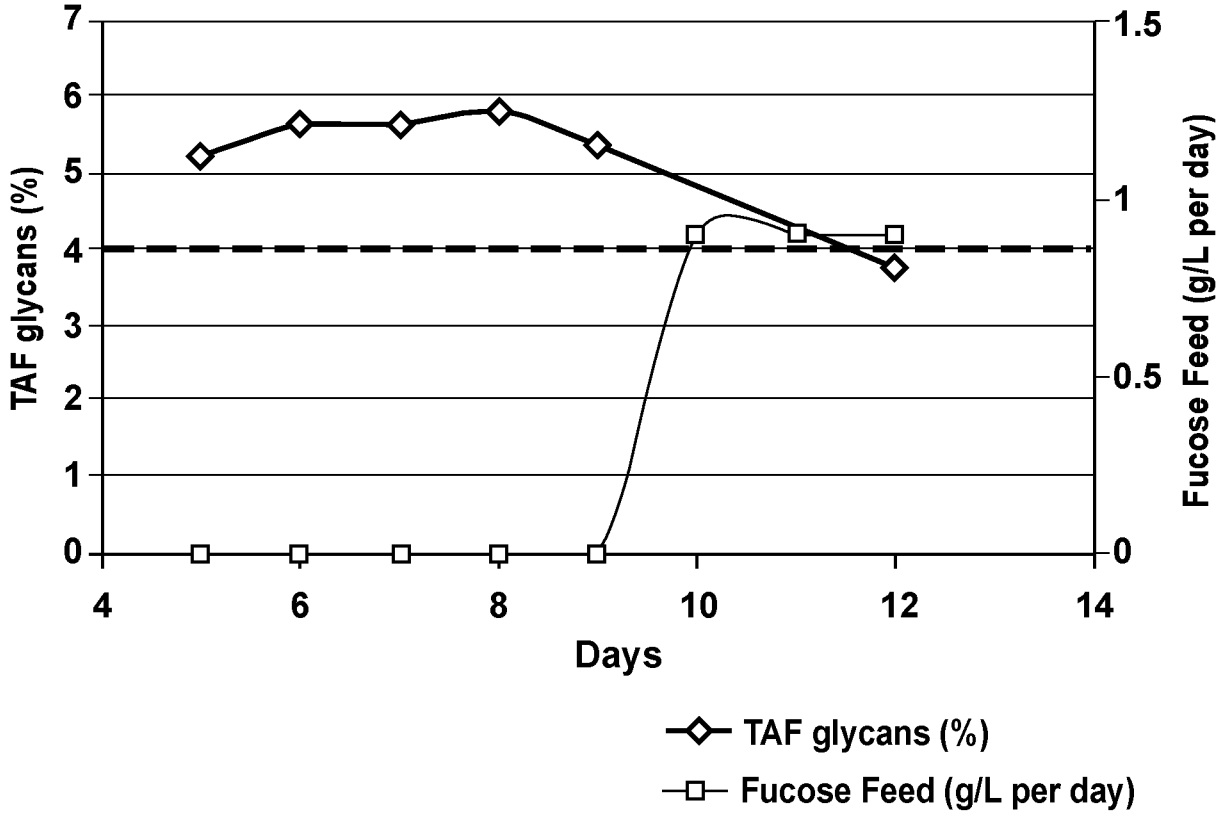

7
6
5
4
3
2
1
0
TAF glycans (%)
1.5
1
0.5
0
Fucose Feed (g/L per day)
4
6
8
10
12
14
Days
TAF glycans (%)
Fucose Feed (g/L per day)

FIGURE 12

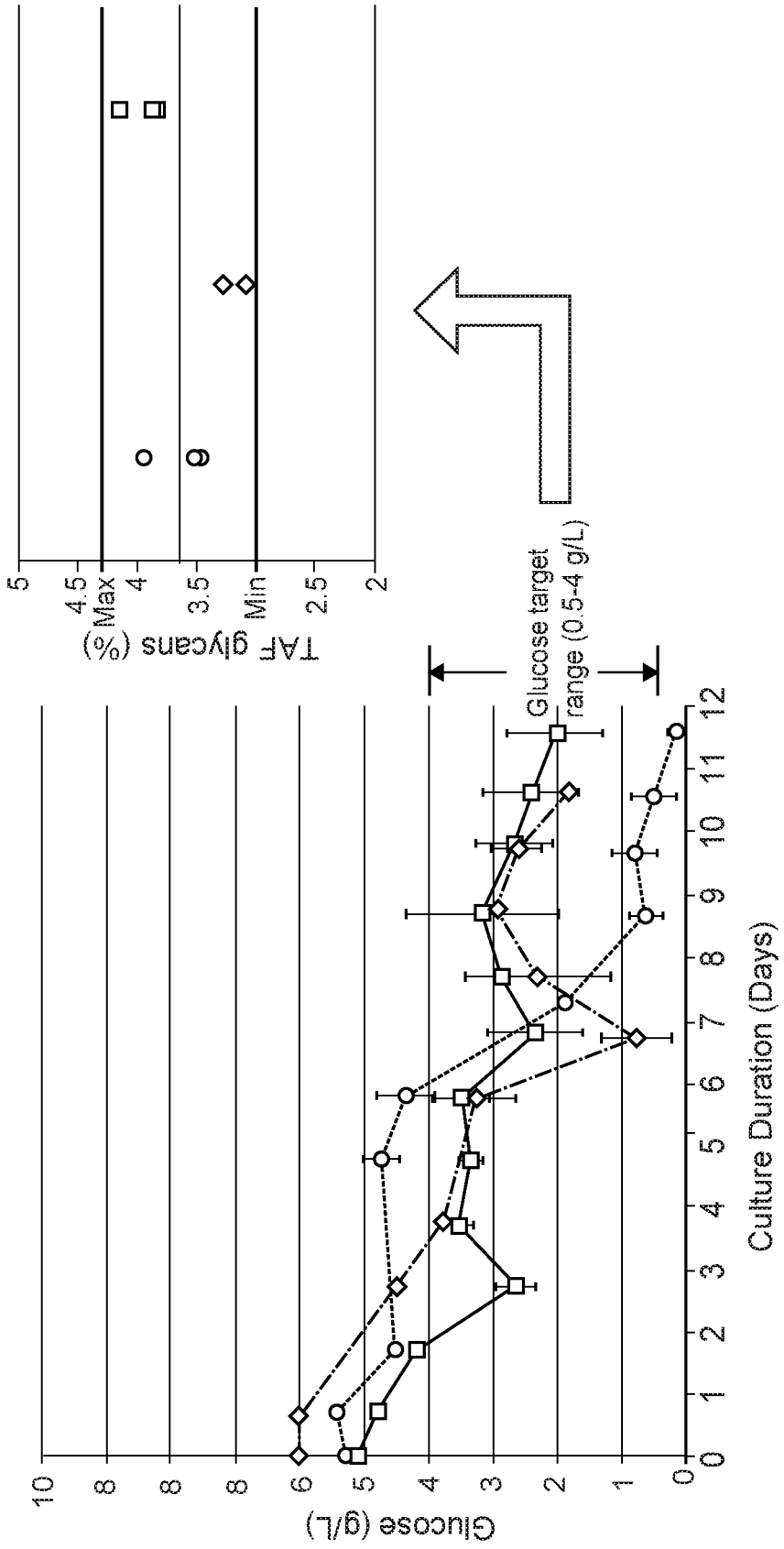

Glucose (g/L)
Culture Duration (Days)
Glucose target range (0.5-4 g/L)
TAF glycans (%)
Max
Min

FIGURE 13

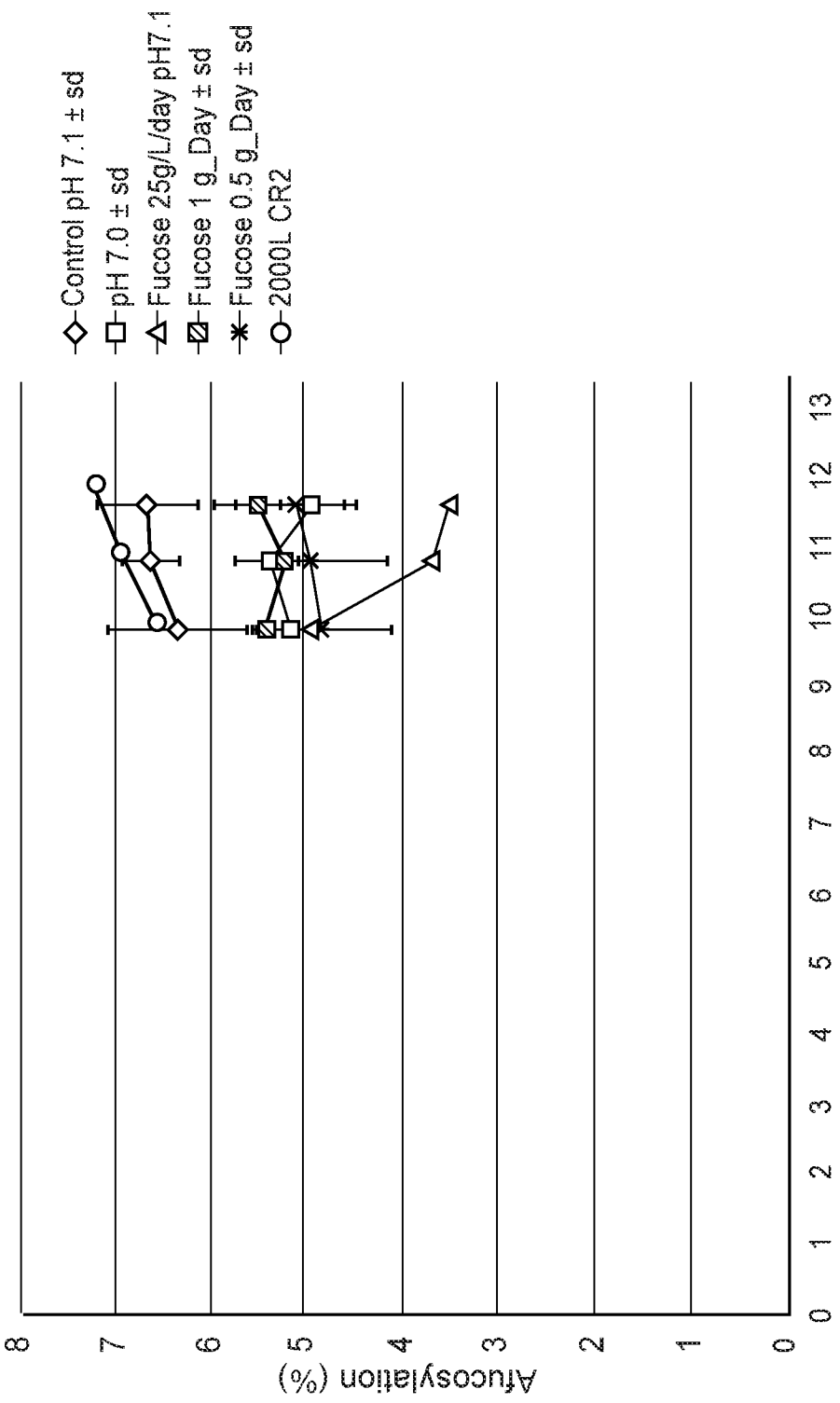

Control pH 7.1 ± sd
pH 7.0 ± sd
Fucose 25g/L/day pH7.1
Fucose 1 g_Day ± sd
Fucose 0.5 g_Day ± sd
2000L CR2
Afucosylation (%)
0
1
2
3
4
5
6
7
8
Culture Duration (Days)
0
1
2
3
4
5
6
7
8
9
10
11
12
13

FIGURE 14