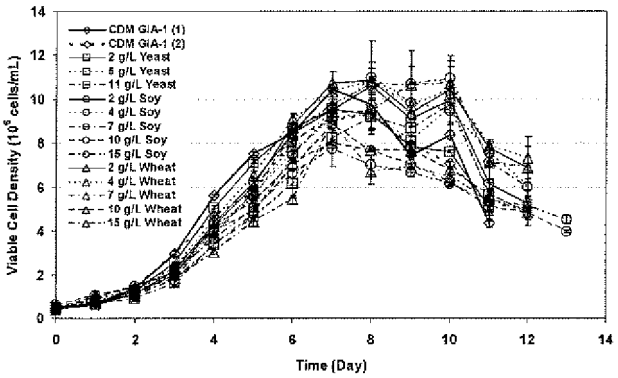
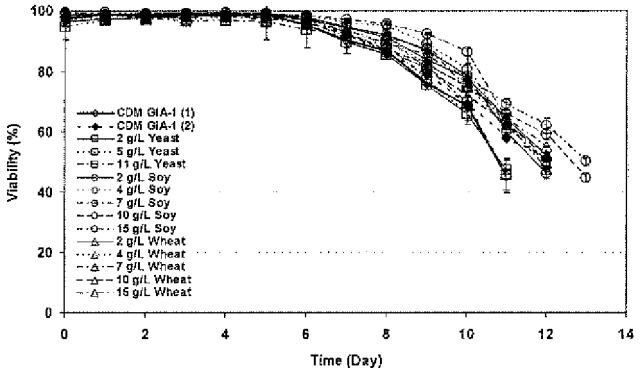
Figure 1.A



B



C

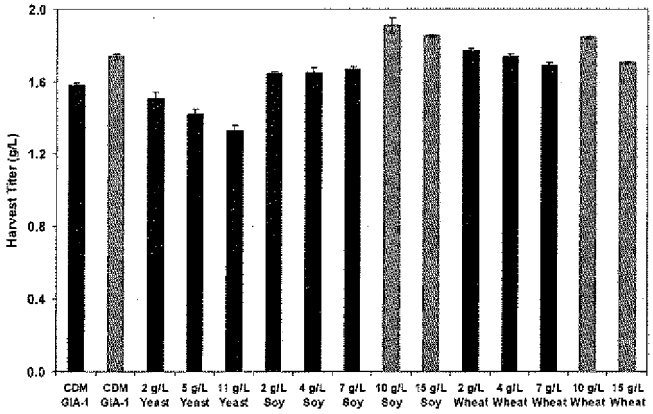


Figure 1. **Example 1: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #1 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

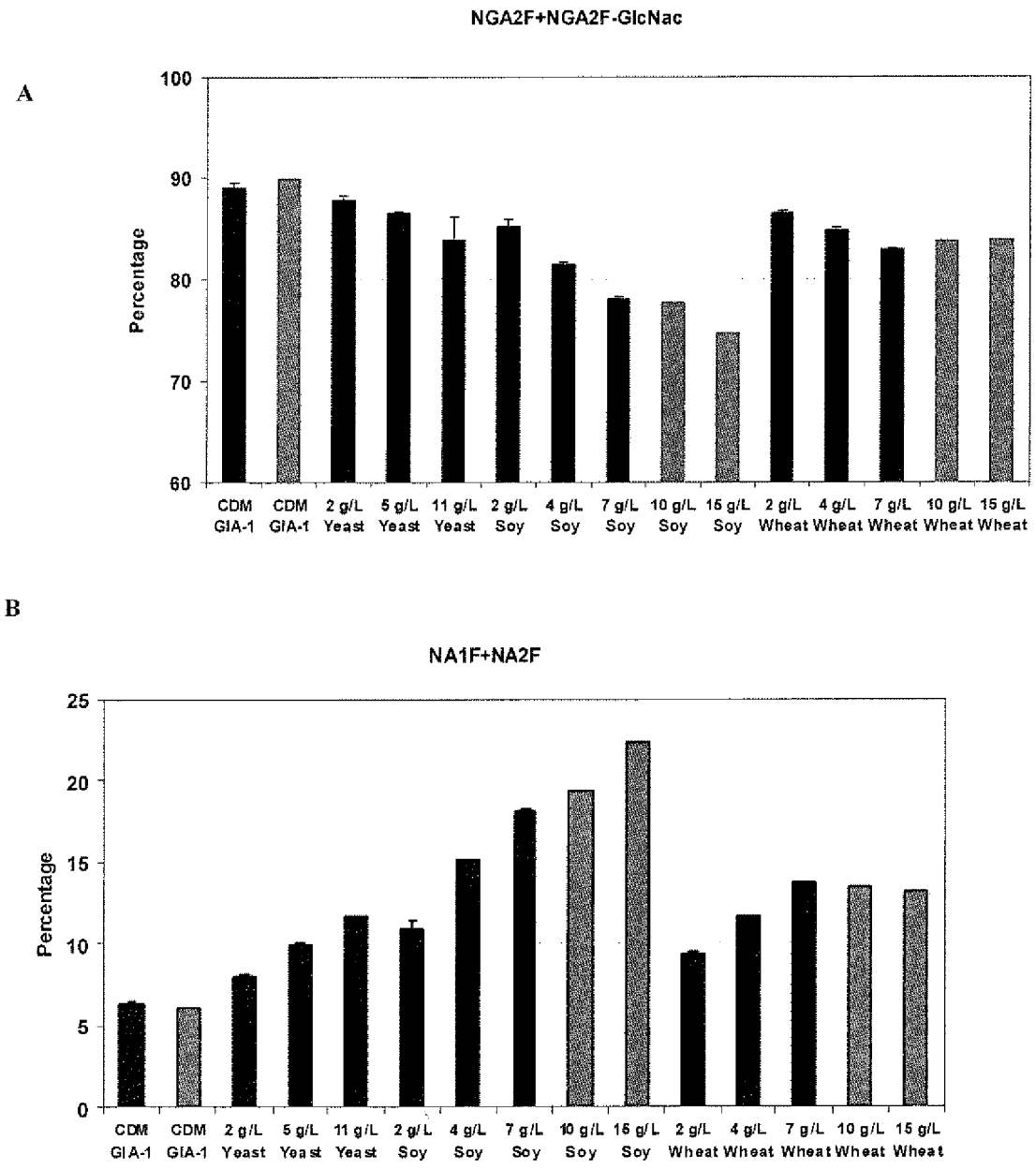


Figure 2. **Example 1: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F.**

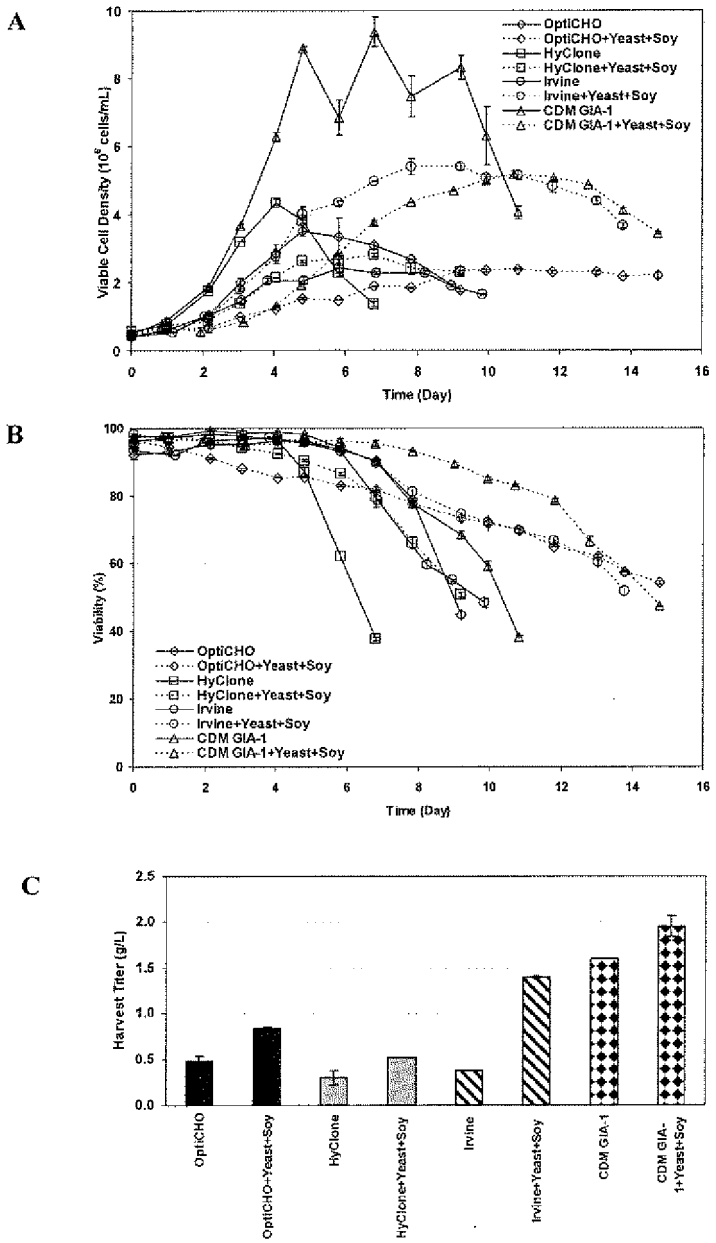


Figure 3. **Example 2: Effect of combined supplementation of yeast and soy hydrolysates to CD media from multiple suppliers in adalimumab-producing CHO cell line #1 on (A) Culture growth, (B) Viability, and (C) Harvest titer**

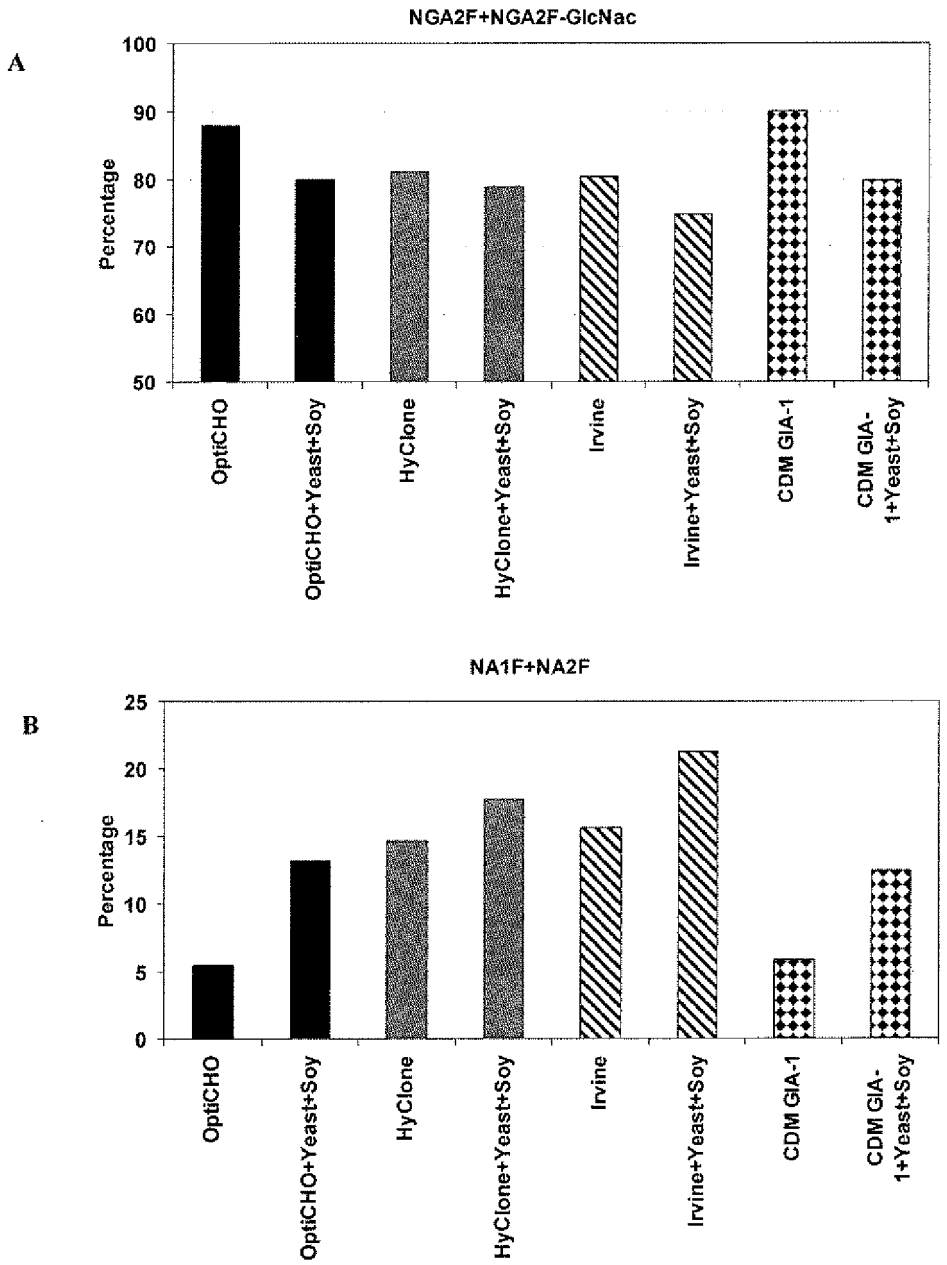


Figure 4. **Example 2: Effect of combined supplementation of yeast and soy hydrolysates to CD media from multiple suppliers in adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

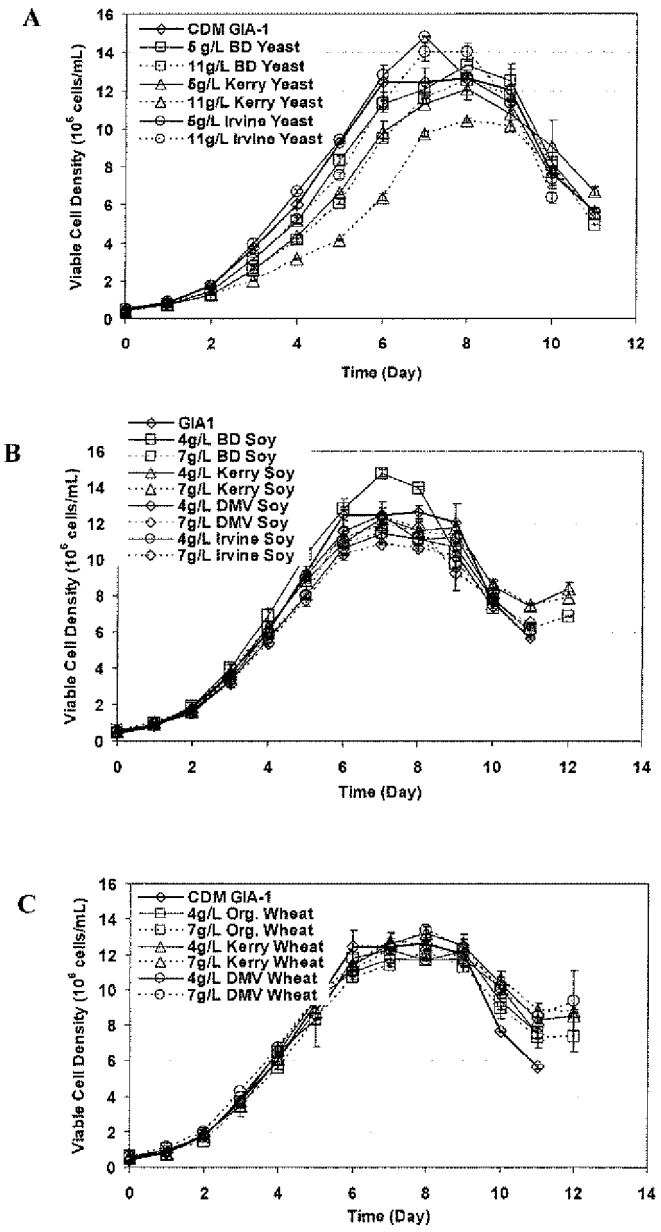


Figure 5. **Example 3: Effect of supplementing (A) yeast, (B) soy, or (C) wheat hydrolysate from multiple vendors to CDM GIA-1 on culture growth in CHO cell line #1**

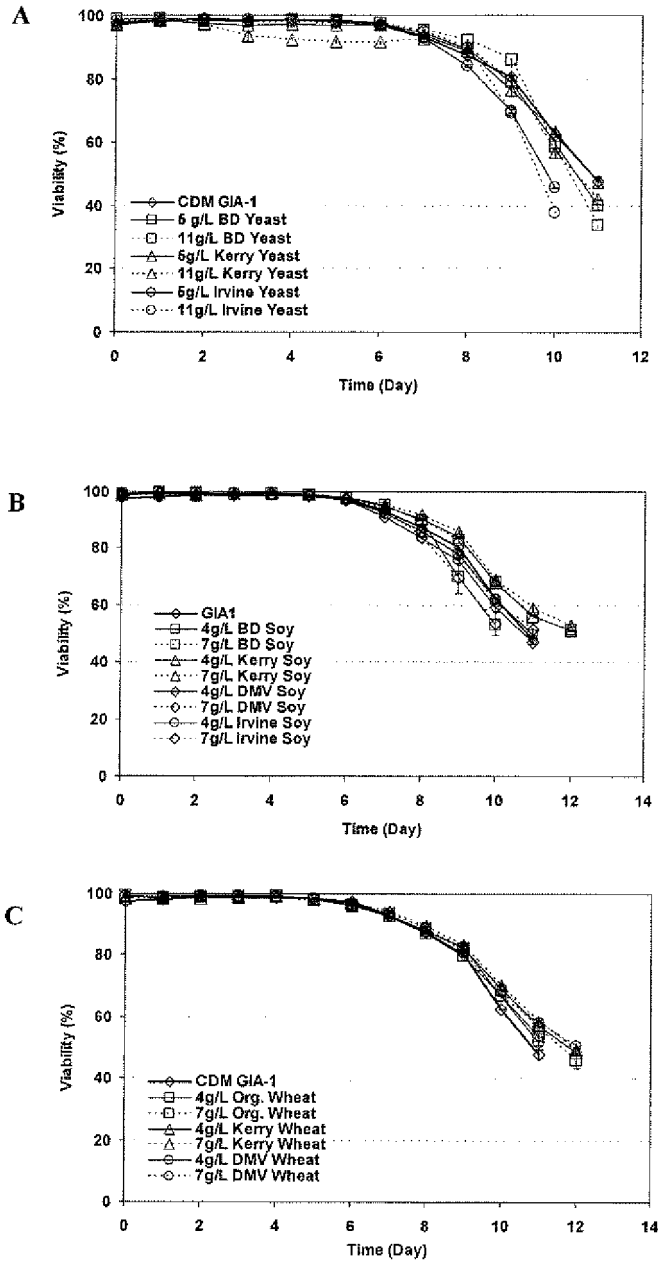


Figure 6. **Example 3: Effect of supplementing (A) yeast, (B) soy, or (C) wheat hydrolysate from multiple vendors to CDM GIA-1 on culture viability in CHO cell line #1**

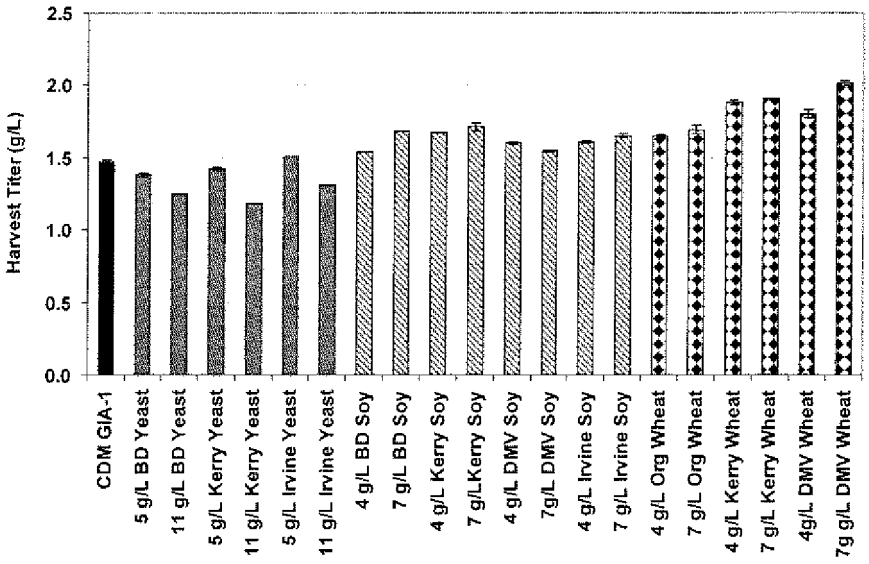


Figure 7. **Example 3: Effect of supplementing yeast, soy, or wheat hydrolysate from multiple vendors to CDM GIA-1 on harvest titer in CHO cell line #1**

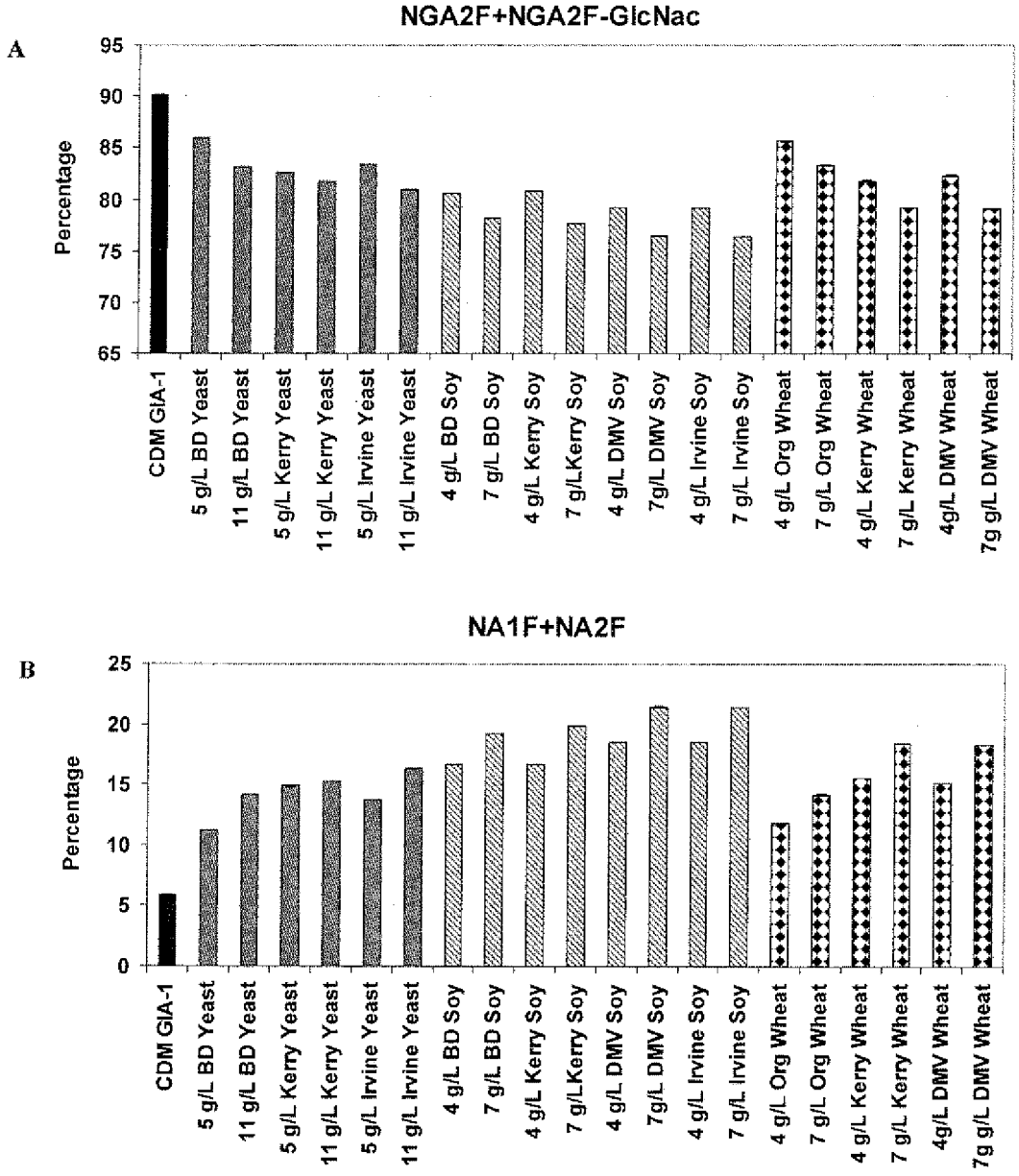


Figure 8. **Example 3: Effect of supplementing yeast, soy, or wheat hydrolysate from multiple vendors to CDM GIA-1 in CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

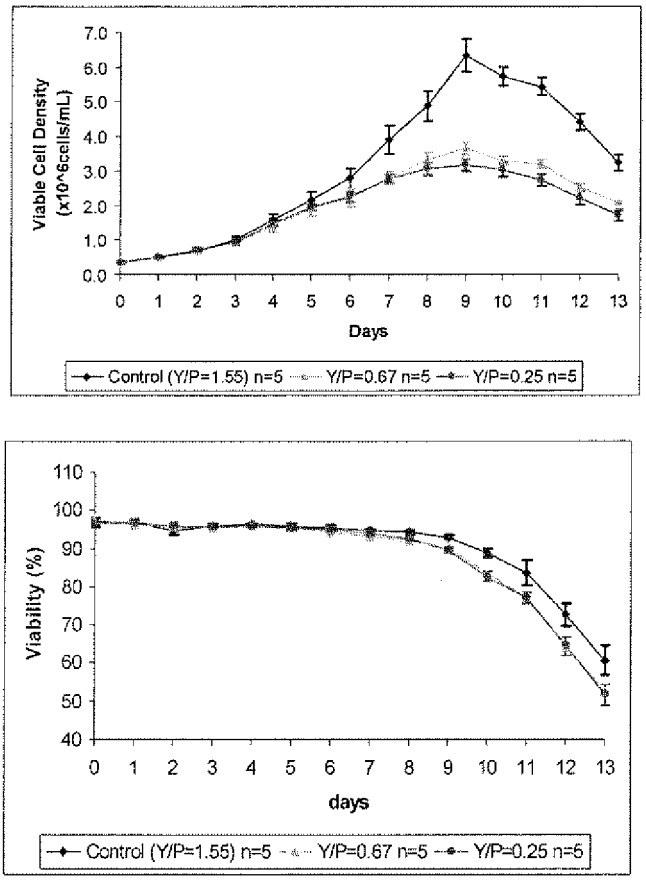


Figure 9. **Example 4: Viable Cell Density and Viability in Hydrolysate Study #1 (Note: Error bar represent one standard deviation).**

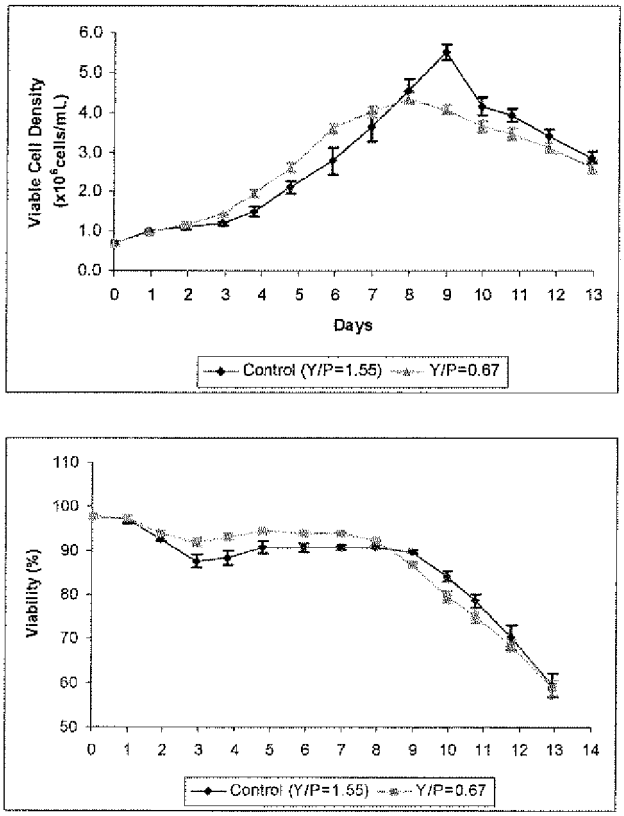


Figure 10. Example 4: Viable Cell Density and Viability in Hydrolysate Study #2 (Note: Error bar represents one standard deviation).

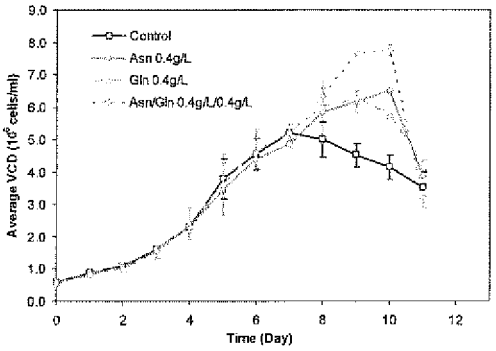
Condition (no. of runs)	%NGA2F+ (NGA2F-GlcNAc)	% NA1F+NA2F	%Man5+Man6
Control: Y/P =1.55 (n=5)	75.87 ± 1.04	17.54 ± 0.91	6.59 ± 0.39
Y/P = 0.67 (n=5)	74.31 ± 0.73	18.32 ± 0.41	7.35 ± 0.63
Y/P = 0.25 (n=5)	72.75 ± 0.91	19.07 ± 0.54	8.29 ± 0.94

Figure 11. Example 4: Glycosylation Profile in Hydrolysate Study 1 (Note: "±" represents one standard deviation)

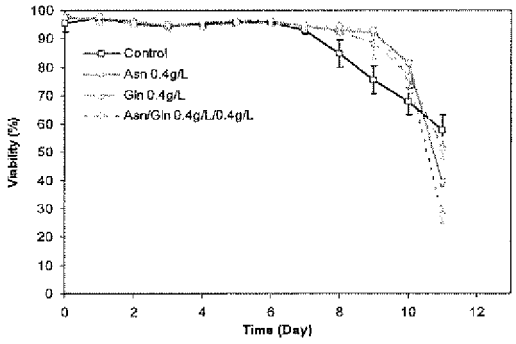
Condition (no. of runs)	%NGA2F+ (NGA2F-GlcNAc)	% NA1F+NA2F	%Man5+Man6
Control: Y/P =1.55 (n=6)	77.49 ± 0.34	15.55 ± 0.62	6.95 ± 0.30
Y/P = 0.67 (n=6)	75.40 ± 0.14	17.97 ± 0.18	6.64 ± 0.13

Figure 12. Example 4: Glycosylation Profile in Hydrolysate Study 2 (Note: "±" represents one standard deviation)

A.



B.



C.

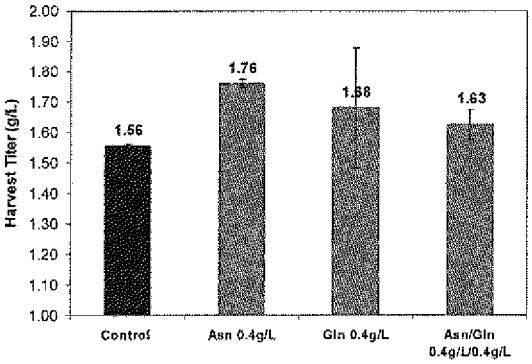
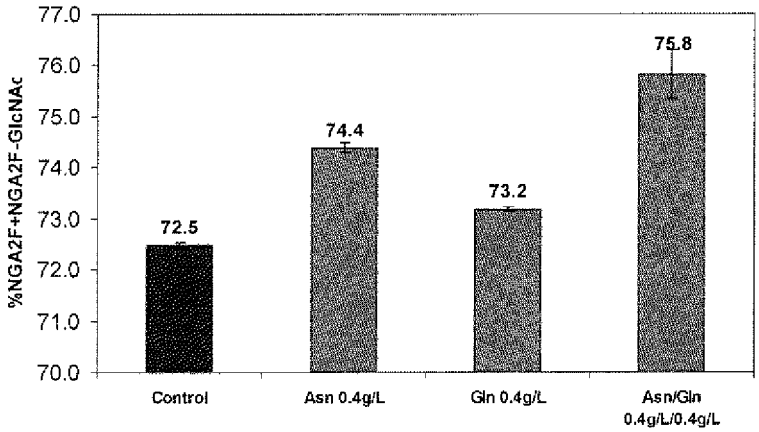


Figure 13. **Example 5: Effect of asparagine and glutamine in 3L bioreactor batch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer when asparagine and/or glutamine was added on day7.**

A.



B.

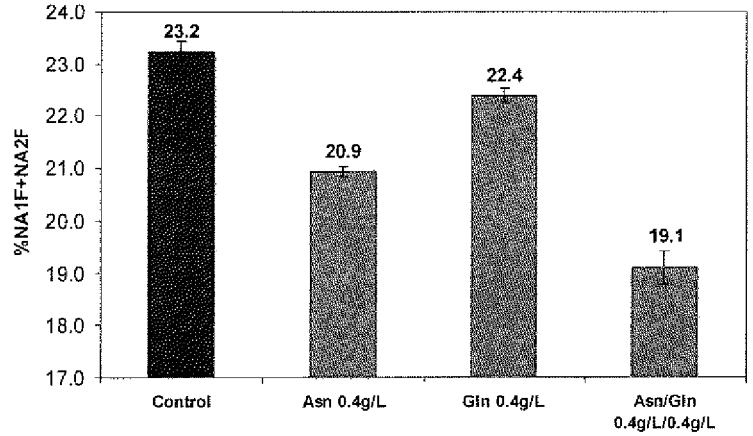
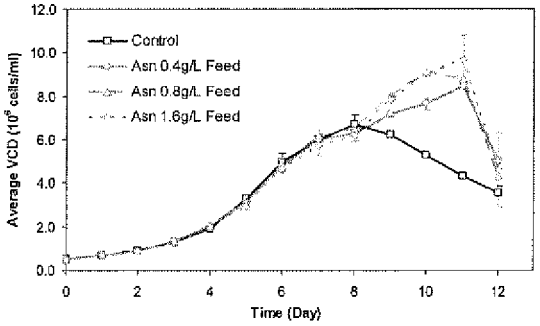
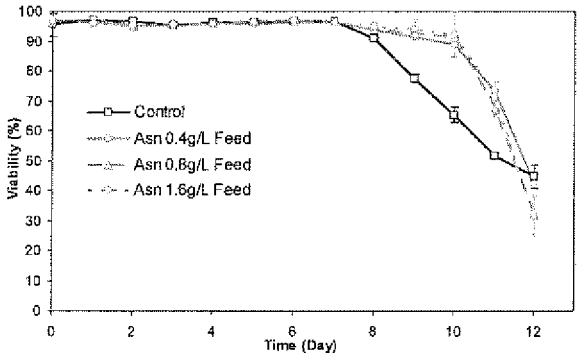


Figure 14. **Example 5: Effect of asparagine and glutamine in 3L bioreactor batch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F when asparagine and/or glutamine was added on day7**

A.



B.



C.

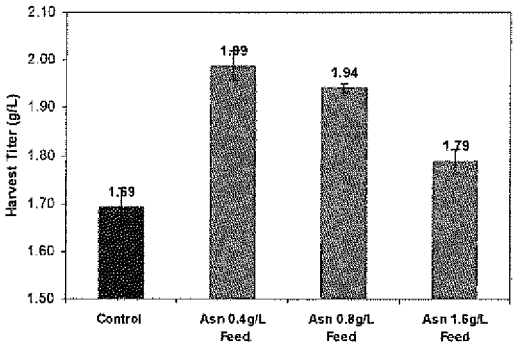
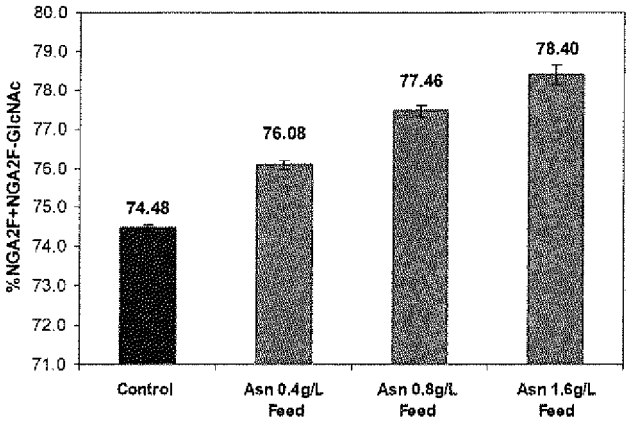


Figure 15. **Example 5: Effect of asparagine in 3L bioreactor batch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when asparagine was added on day7**

A.



B.

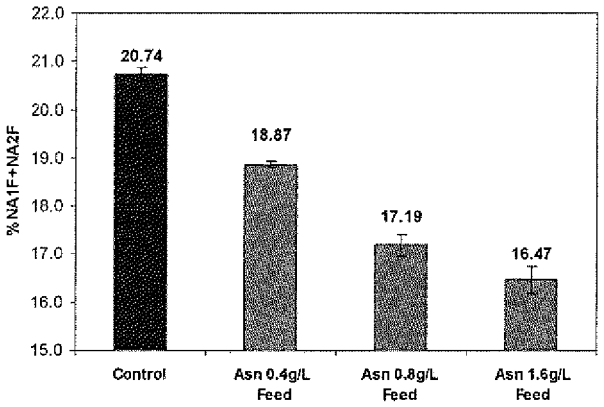
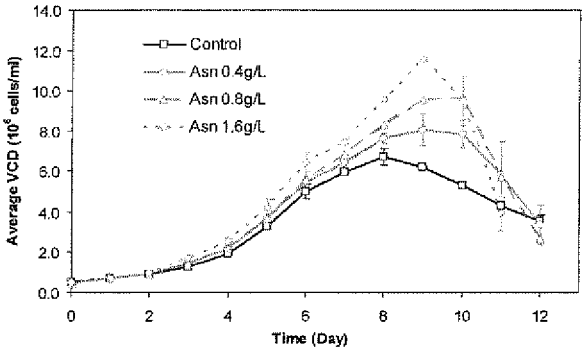
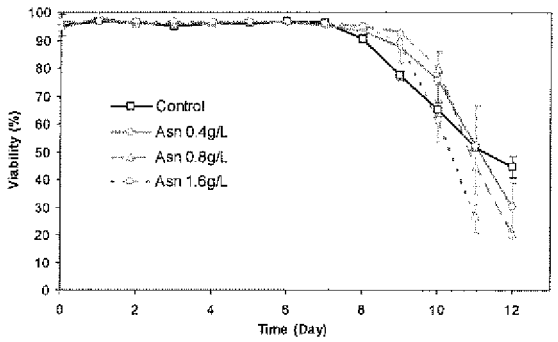


Figure 16. **Example 5: Effect of asparagine in 3L bioreactor batch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F when asparagine was added on day7**

A.



B.



C.

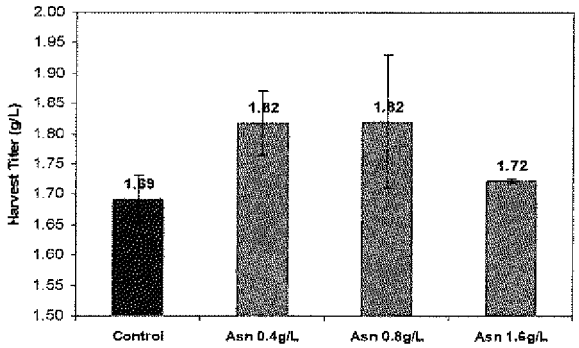
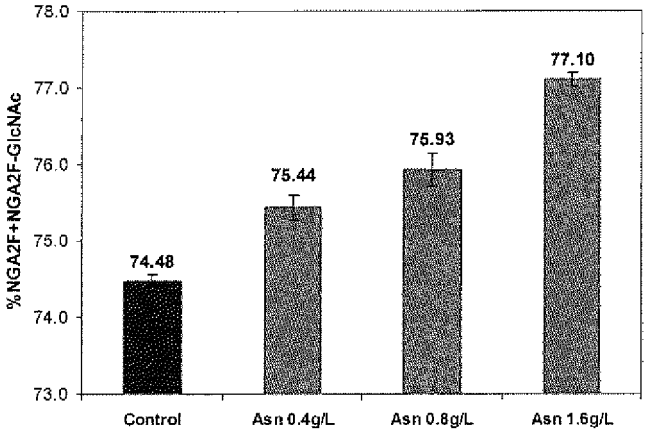


Figure 17. **Example 5: Effect of asparagine in 3L bioreactor batch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when asparagine was added on day0**

A.



B.

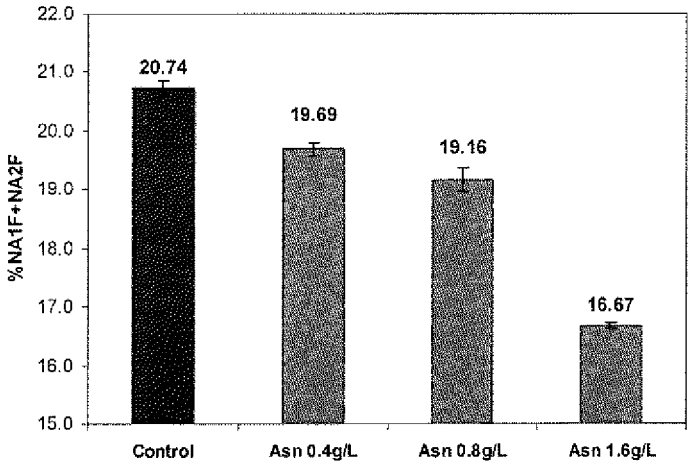


Figure 18. **Example 5: Effect of asparagine in 3L Bioreactor catch culture in hydrolysate based medium with adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F when asparagine was added on day0**

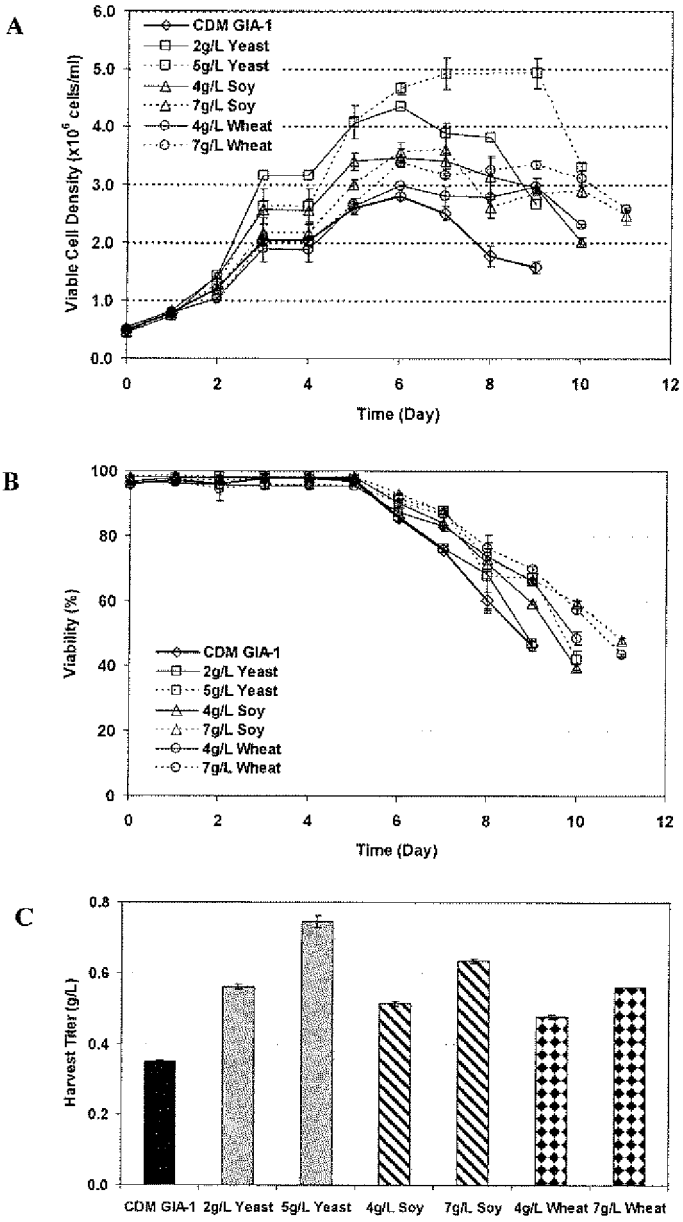


Figure 19. **Example 6: Effect of yeast, soy, or wheat hydrolysate addition to CDM Irvine IS CHO-CD in adalimumab-producing CHO cell line #1 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

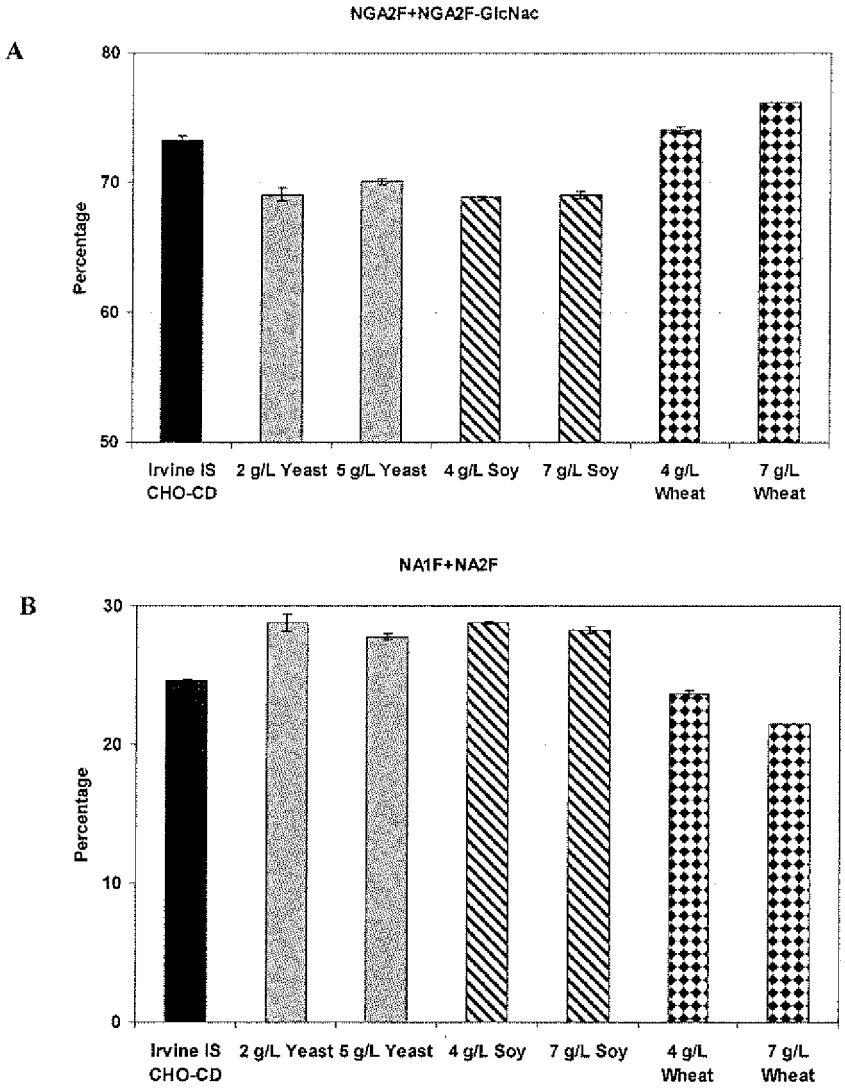


Figure 20. **Example 6: Effect of yeast, soy, or wheat hydrolysates addition to CDM Irvine IS CHO-CD in adalimumab-producing CHO cell line #1 on oligosaccharides profile (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

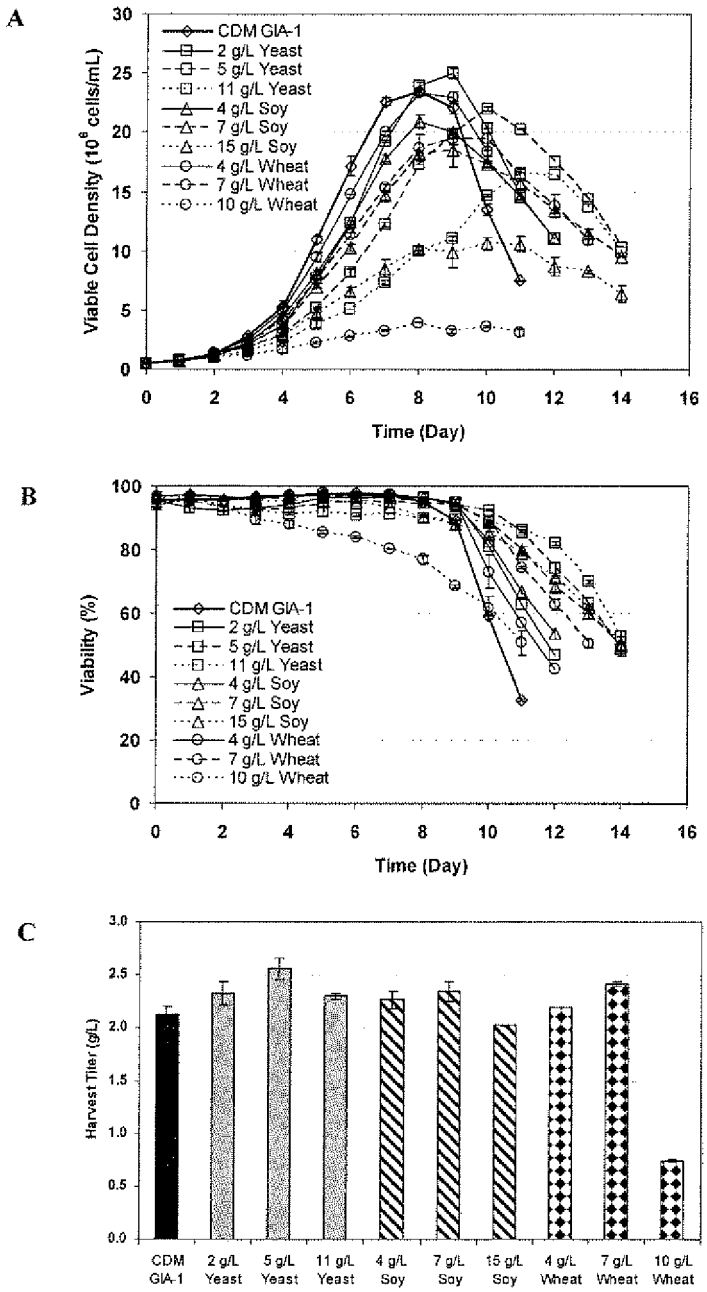


Figure 21. **Example 7: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #2 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

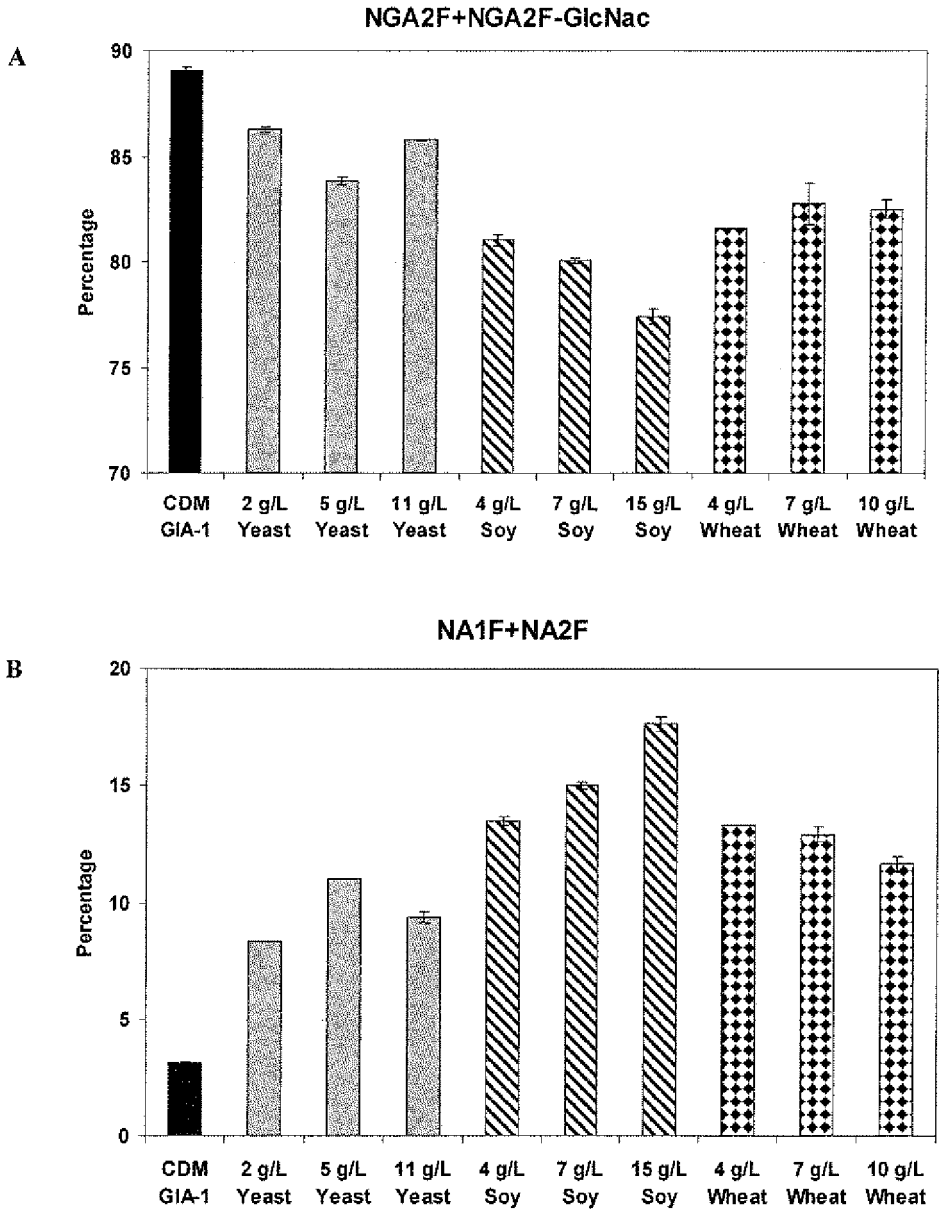


Figure 22. **Example 7: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #2 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

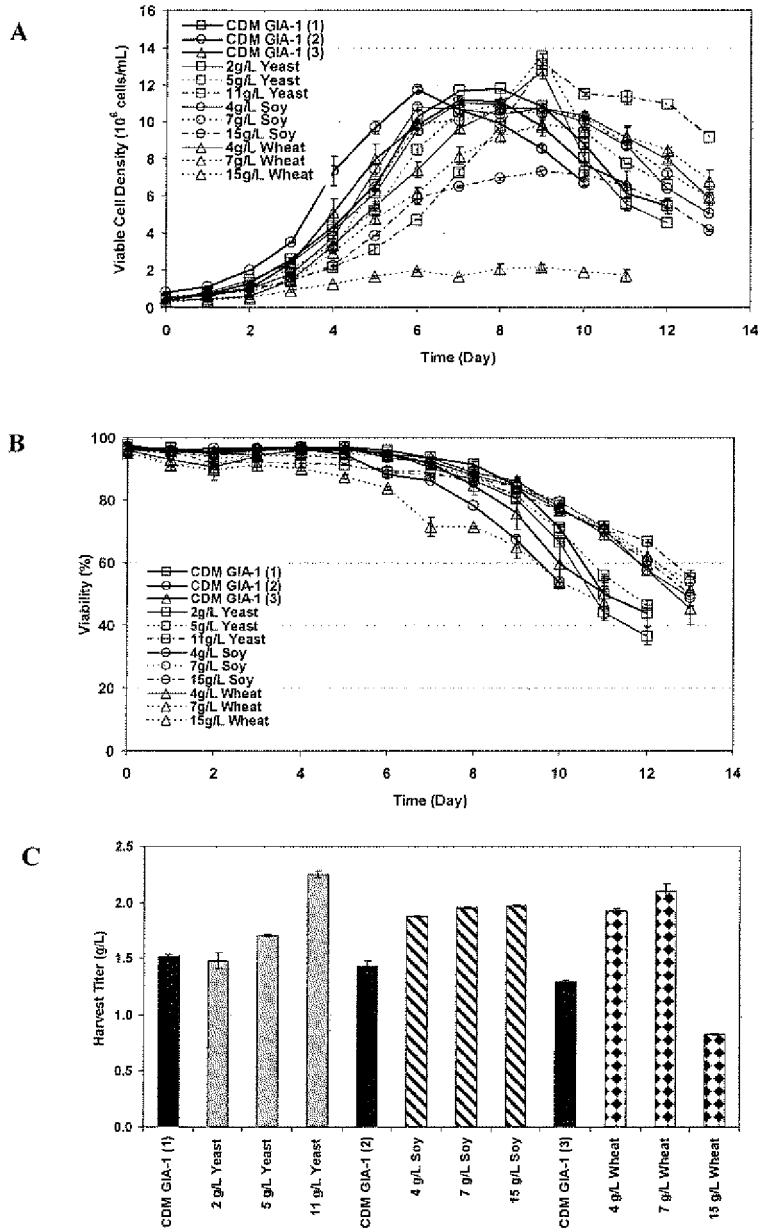


Figure 23. **Example 8: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #3 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

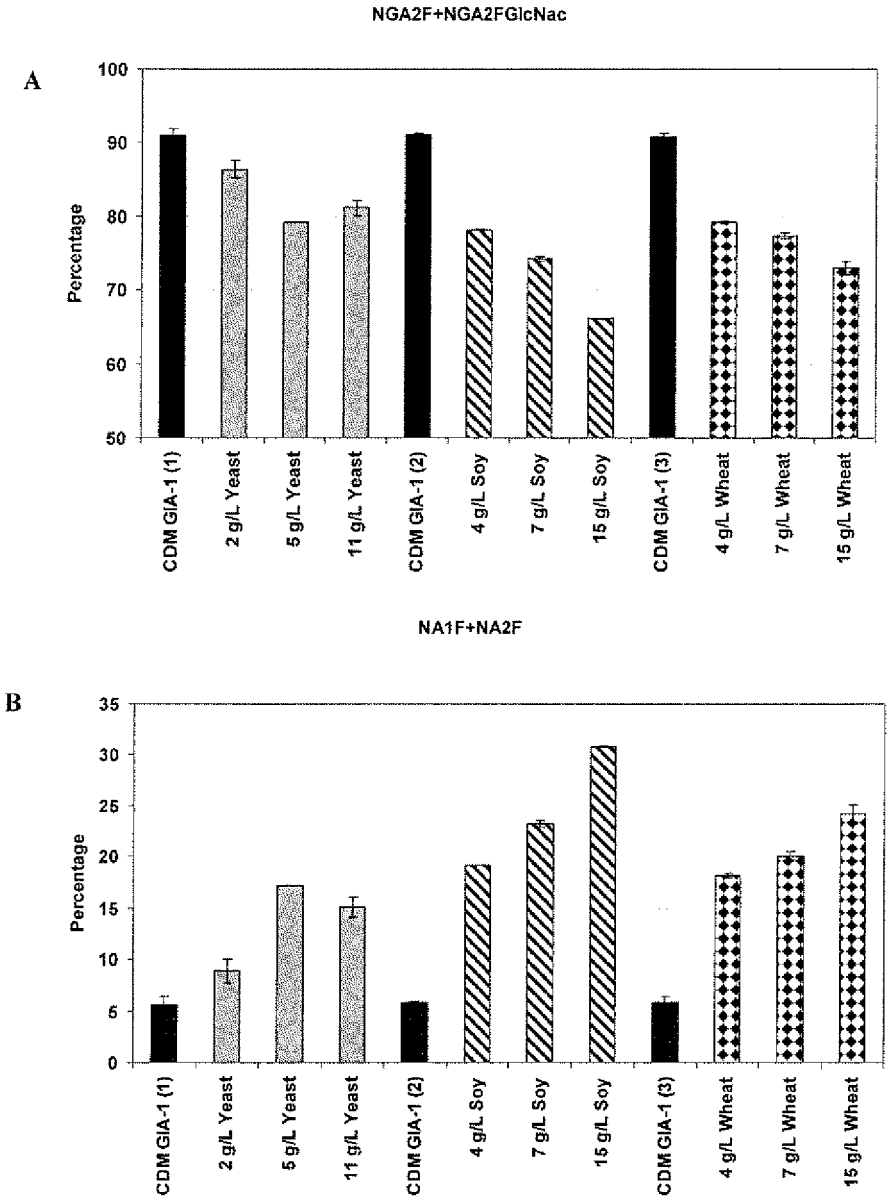


Figure 24. **Example 8: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in adalimumab-producing CHO cell line #3 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

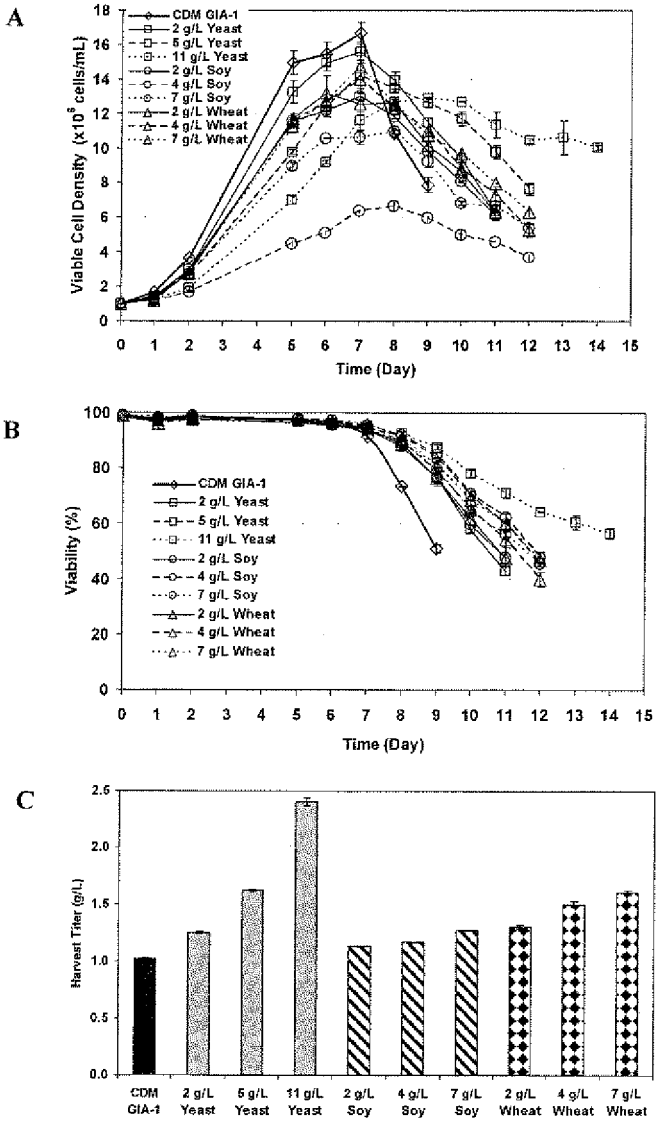


Figure 25. **Example 9: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in CHO cell line producing mAb #1 (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

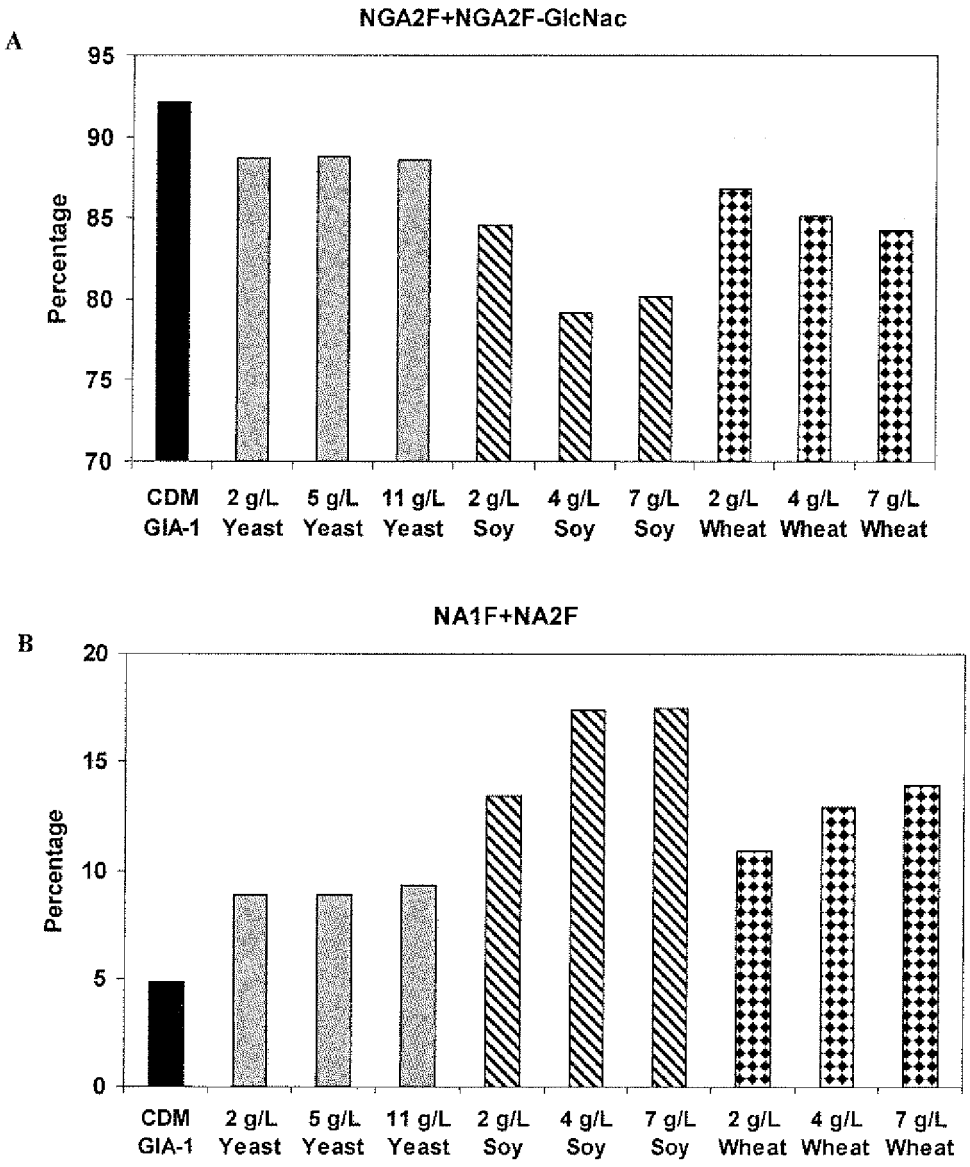


Figure 26. **Example 9: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in CHO cell line producing mAb #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

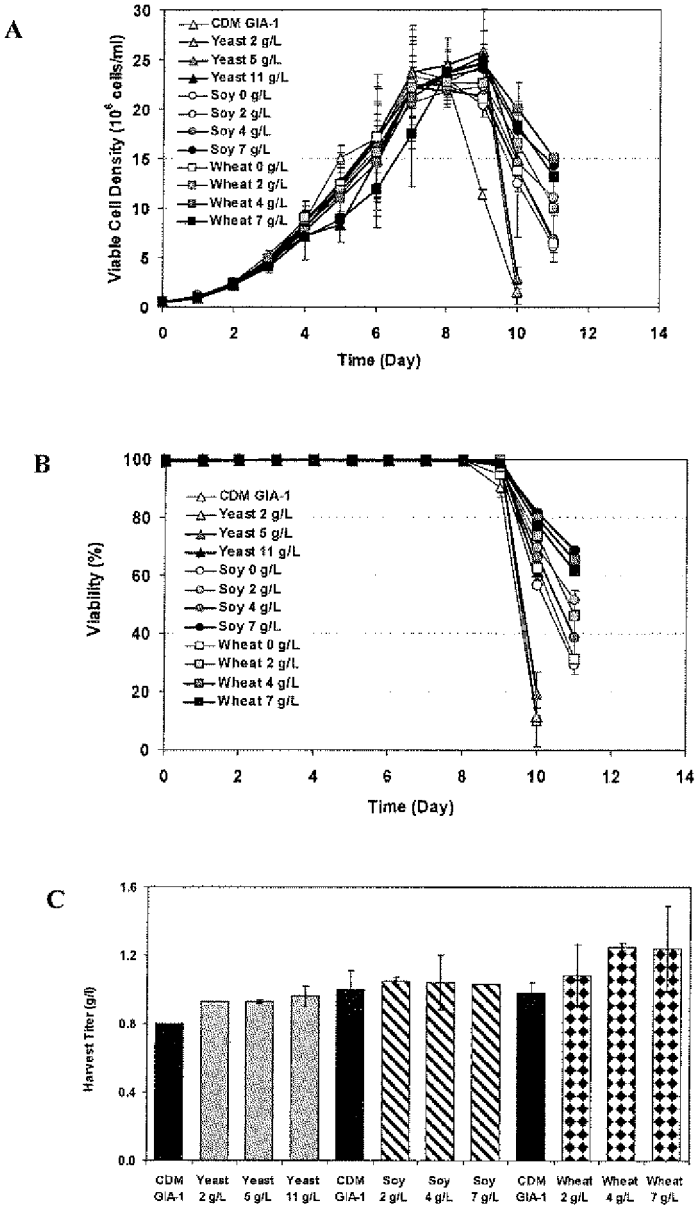


Figure 27. **Example 10: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in CHO cell line producing mAb #2 on (A) Culture growth, (B) Culture viability, and (C) Harvest titer**

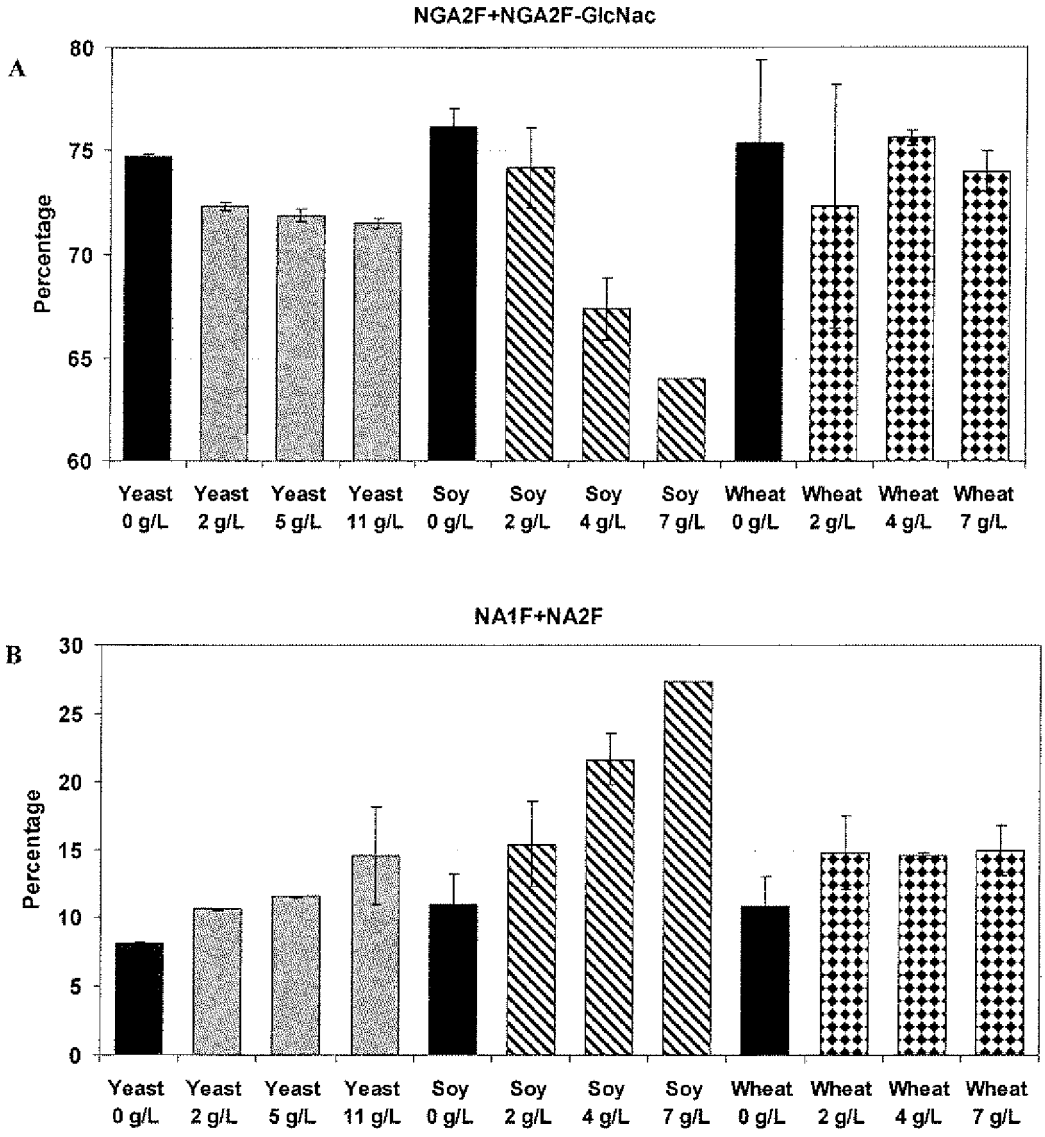


Figure 28. **Example 10: Effect of yeast, soy, or wheat hydrolysate addition to CDM GIA-1 in CHO cell line producing mAb #2 on (A) NGA2F + NGA2F-GlcNac and (B) NA1F + NA2F**

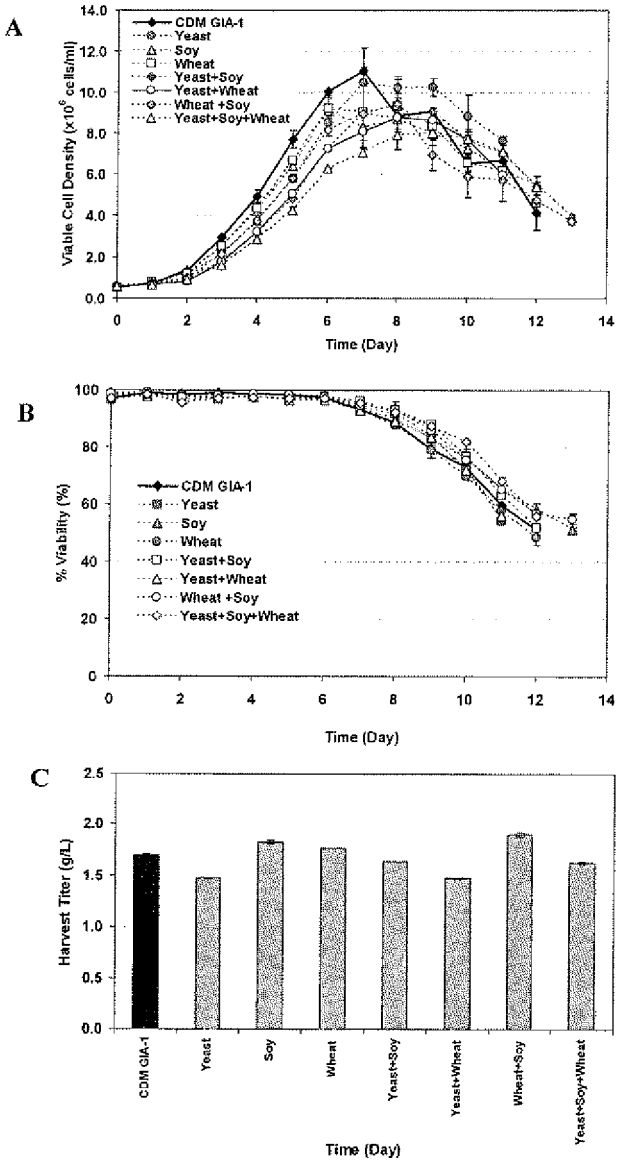


Figure 29. **Example 11: Effect of combined supplementation of yeast, soy and/or wheat hydrolysates to CDM GIA-1 in adalimumab-producing CHO cell line #1 on (A) Culture growth, (B) Viability, and (C) Harvest titer**

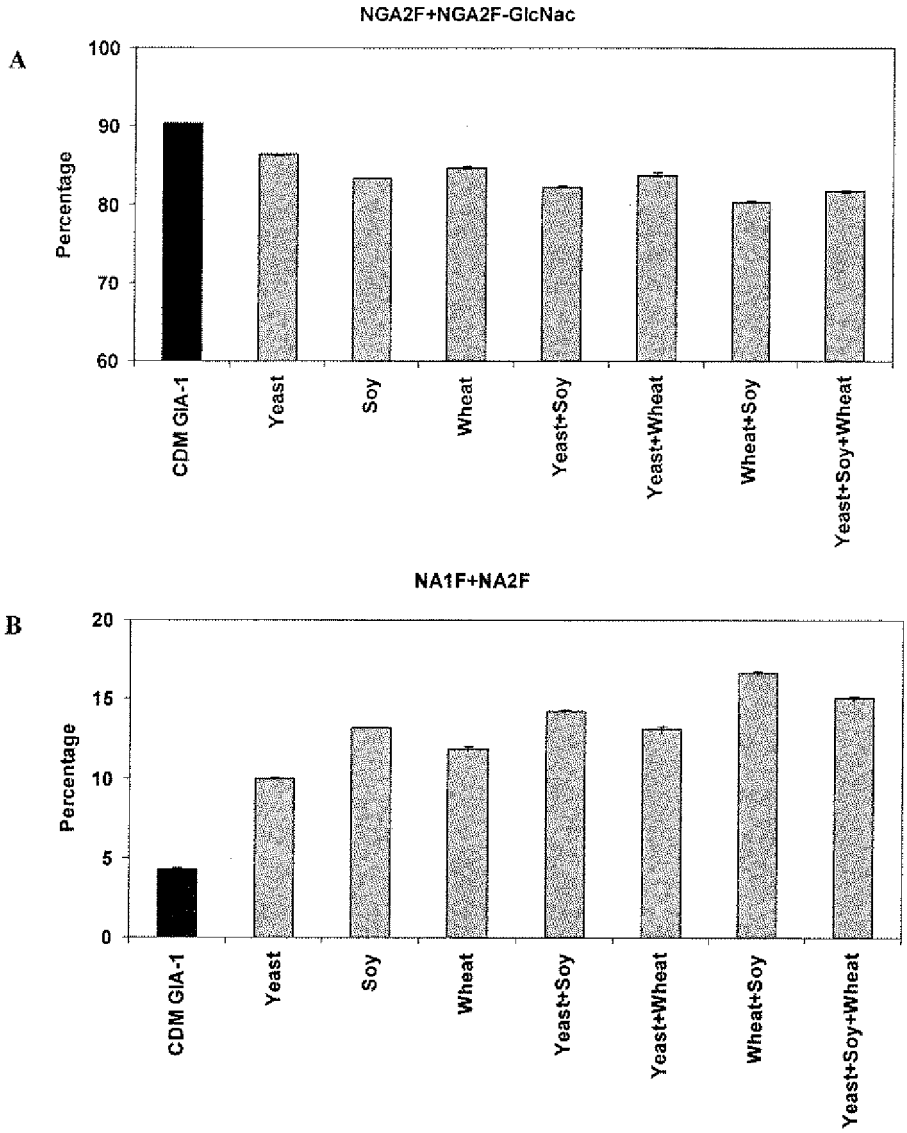
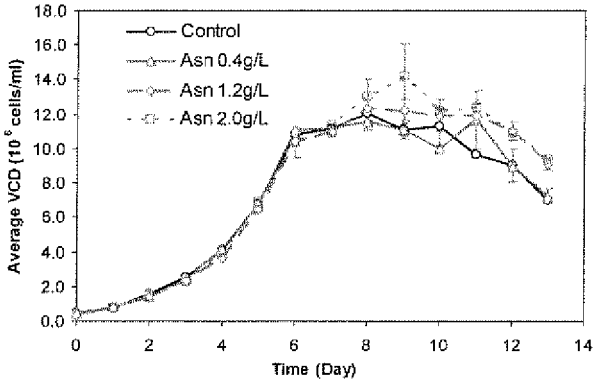
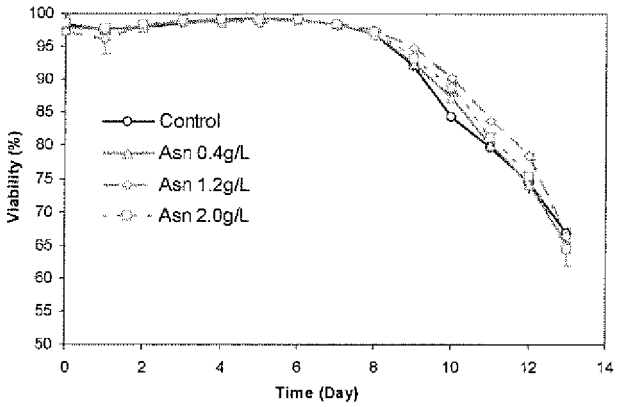


Figure 30. **Example 11: Effect of combined supplementation of yeast, soy, and/or wheat hydrolysates to CDM GIA-1 in adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F**

A.



B.



C.

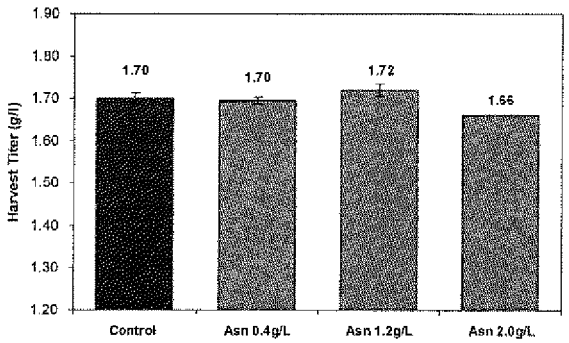
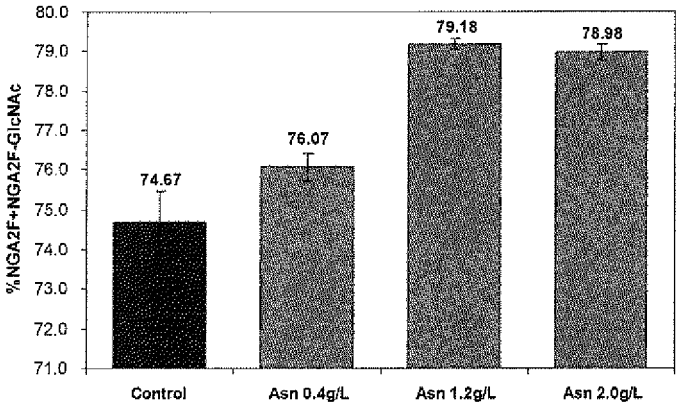


Figure 31. **Example 12: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with adalimumab-producing CHO cell line #1 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when asparagine was added on day6**

A.



B.

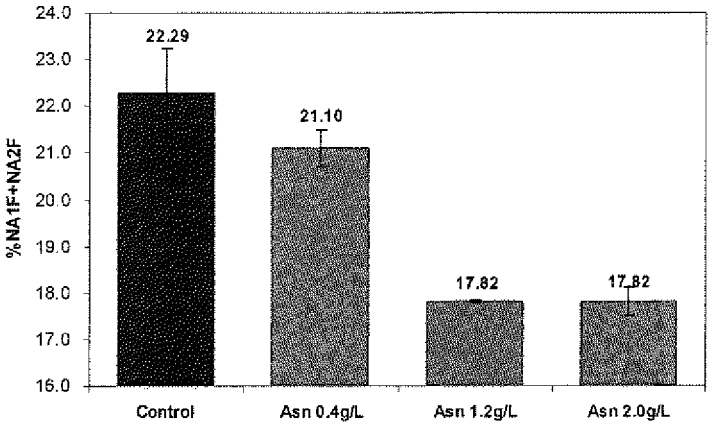
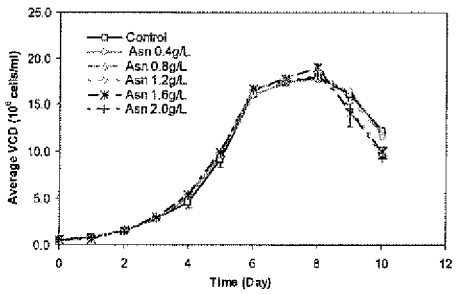
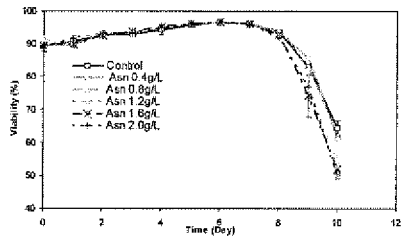


Figure 32. **Example 12: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with adalimumab-producing CHO cell line #1 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F when asparagine was added on day6**

A.



B.



C.

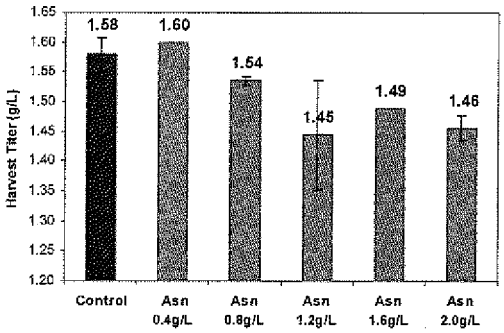
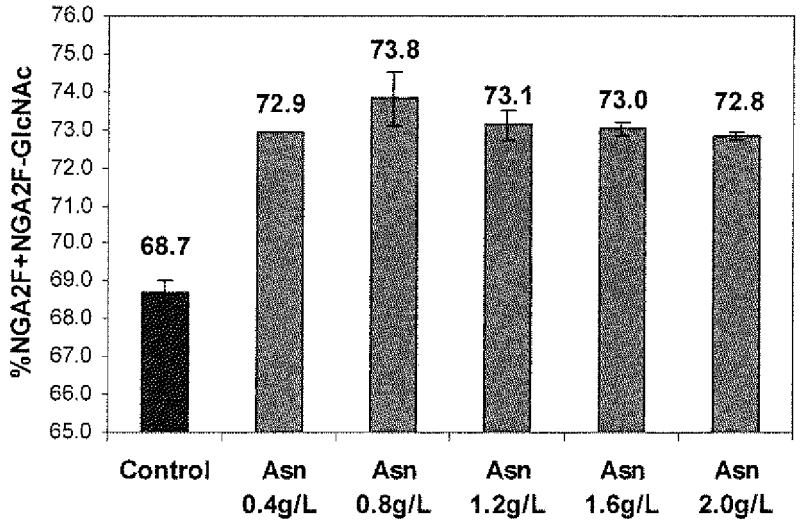


Figure 33. **Example 13: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with adalimumab-producing CHO cell line #3 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when asparagine was added on day6**

A.



B.

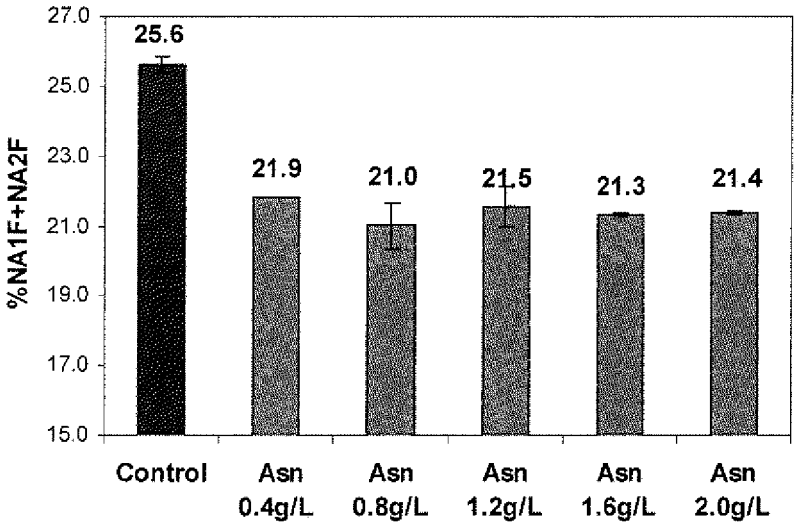
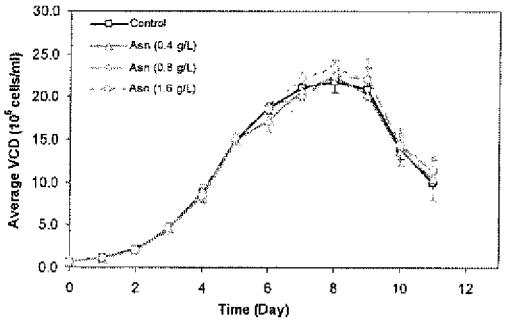
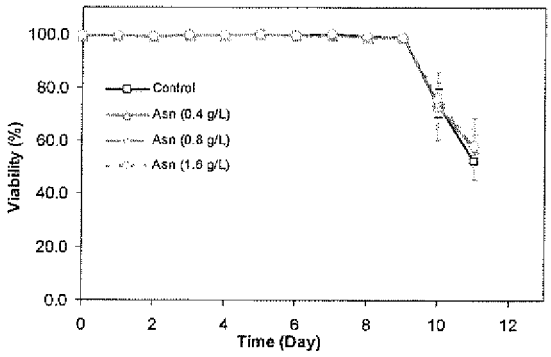


Figure 34. **Example 13: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with adalimumab-producing CHO cell line #3 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F when asparagine was added on day6**

A.



B.



C.

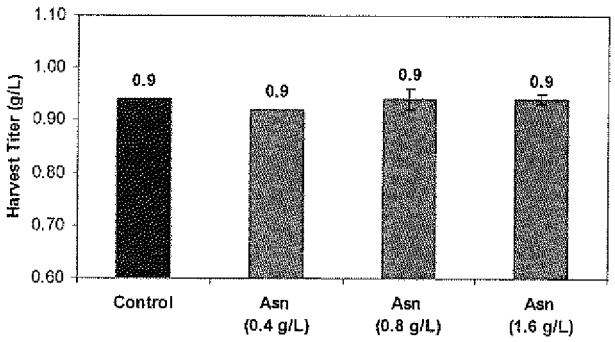
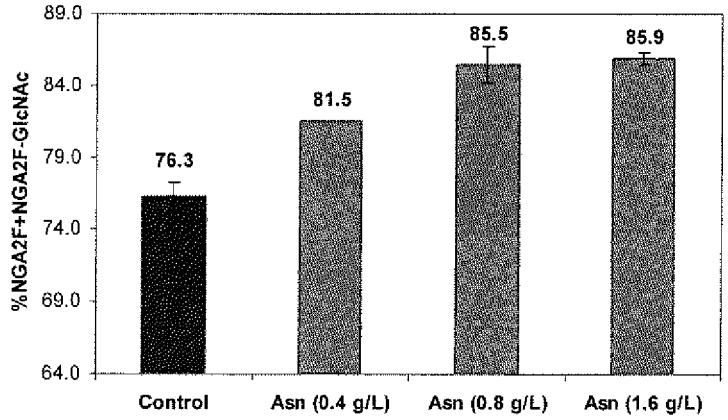


Figure 35. **Example 14: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with CHO cell line producing mAb #2 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when Asparagine was supplemented during medium preparation.**

A.



B.

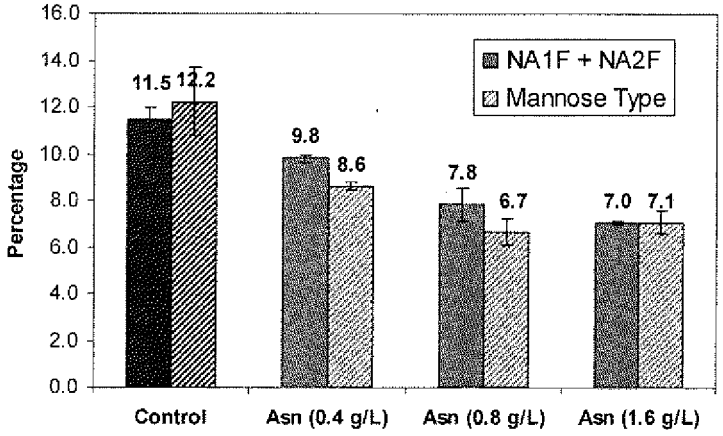
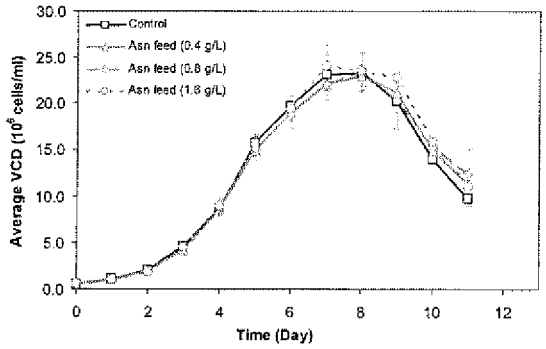
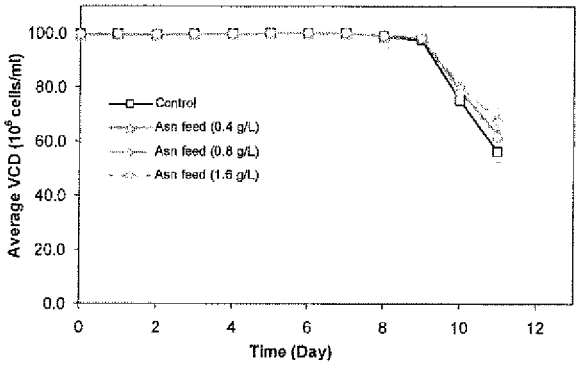


Figure 36. **Example 14: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with CHO cell line producing mAb #2 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F and Mannose Type when asparagine was supplemented during medium preparation.**

A.



B.



C.

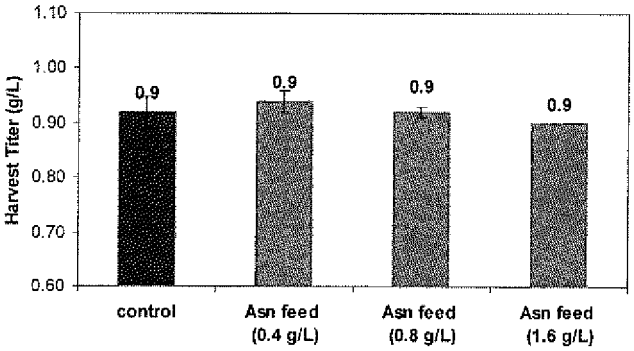
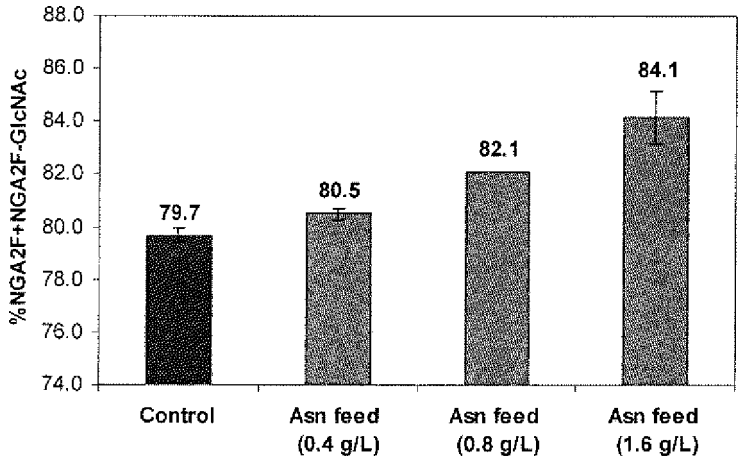


Figure 37. **Example 14: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with CHO cell line producing mAb #2 on A) Culture growth, (B) Culture viability, and (C) Harvest titer when Asparagine was added on day 5.**

A.



B.

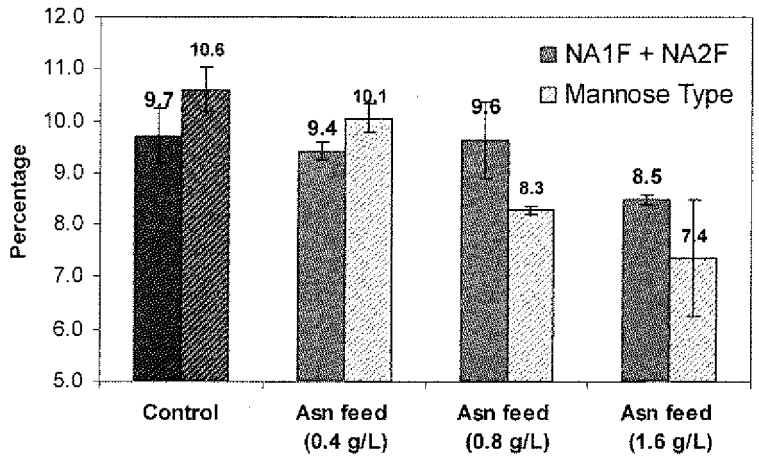


Figure 38. **Example 14: Effect of asparagine in shake flask batch culture in CDM GIA-1 medium with CHO cell line producing mAb #2 on (A) NGA2F+NGA2F-GlcNac and (B) NA1F+NA2F and Mannose Type when asparagine was added on day 5.**

Figure 39. Experimental design for Example 1

Experiment Block #	Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
I	Bacto TC Yeastolate BBL Phytone Peptone Wheat Peptone E1	BD Biosciences / 255772 BD Biosciences / 211096 Organotechnie / 19559	2 2 2	2, 5, 11 2, 4, 7, 10, 15 2, 4, 7, 10, 15
II	BBL Phytone Peptone Wheat Peptone E1	BD Biosciences / 211096 Organotechnie / 19559	2 2	10, 15 10, 15

Figure 40. Experimental design for Example 2

Media/Vendor/Catalog Number	Hydrolysates/Vendor/Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
OptiCHO / Life Sciences Gibco/12681-011 GIA-1 / Life Sciences Gibco / Custom formulation CDM4CHO / HyClone / SH30558.02 IS CHO-CD / Irvine Scientific / 91119	Bacto TC Yeastolate / BD Biosciences / 255772 BBL Phytone Peptone / BD Biosciences / 211096	4.0 (TC Yeastolate) 2.6 (Phytone Peptone)	10.7 (TC Yeastolate) 6.9 (Phytone Peptone)

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Figure 41. Experimental design for Example 3

Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	5, 11
HyPep Yeast Extract	Sheffield/Kerry Biosciences	2	5, 11
UF Yeast Hydrolysate	Irvine Scientific / 292804	2	5, 11
BBL Phytone Peptone	BD Biosciences / 211096	2	4, 7
HyPep 1510	Sheffield/Kerry Biosciences / 5x59053	2	4, 7
SE50 MAF-UF	DMV International / SE50 MAF-UF	2	4, 7
UF Soy Hydrolysate	Irvine Scientific/ 96857	2	4, 7
Wheat Peptone E1	Organotechnie / 19559	2	4, 7
HyPep 4601	Sheffield/Kerry Biosciences / 5z10419	2	4, 7
Proyield WGE80M Wheat	DMV International / WGE80M	2	4, 7

Figure 42. Experimental design for Example 6

Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	2, 5
BBL Phytone Peptone	BD Biosciences / 211096	2	4, 7
Wheat Peptone E1	Organotechnie / 19559	2	4, 7

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Figure 43. Experimental design for Example 7

Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	2, 5, 11
BBL Phytone Peptone	BD Biosciences / 211096	2	4, 7, 15
Wheat Peptone E1	Organotechnie / 19559	2	4, 7, 10

Figure 44. Experimental design for Example 8

Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	2, 5, 11
BBL Phytone Peptone	BD Biosciences / 211096	2	4, 7, 15
Wheat Peptone E1	Organotechnie / 19559	2	4, 7, 15

Figure 45. Experimental design for Example 9

Hydrolysate Name	Hydrolysate Vendor and Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	2, 5, 11
BBL Phytone Peptone	BD Biosciences / 211096	2	2, 4, 7
Wheat Peptone E1	Organotechnie / 19559	2	2, 4, 7

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Figure 46. Experimental design for Example 10

Hydrolysate Name	Hydrolysate Vendor / Catalog Number	Concentration in adaptation media (g/kg)	Concentration in production media (g/kg)
Bacto TC Yeastolate	BD Biosciences / 255772	2	2, 5, 11
BBL Phytone Peptone	BD Biosciences / 211096	2	2, 4, 7
Wheat Peptone E1	Organotechnie / 19559	2	2, 4, 7

Figure 47. Experimental design for Example 11 (adaptation stage)

Experimental ID	Bacto TC Yeastolate (BD Biosciences / 255772) (g/L)	BBL Phytone Peptone (BD Biosciences / 211096) (g/L)	Wheat Peptone E1 (Organotechnie / 19559) (g/L)
1 (control)	0	0	0
2	2	0	0
3	0	2	0
4	0	0	2
5	2	2	0
6	2	0	2
7	0	2	2
8	2	2	2

Figure 48. Experimental design for Example 11 (production stage)

Experimental ID	Bacto TC Yeastolate (BD Biosciences / 255772) (g/L)	BBL Phytone Peptone (BD Biosciences / 211096) (g/L)	Wheat Peptone E1 (Organotechnie / 19559) (g/L)
1 (control)	0	0	0
2	5	0	0
3	0	4	0
4	0	0	4
5	5	4	0
6	5	0	4
7	0	4	4
8	5	4	4

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