SUPPLEMENTARY INFORMATION

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1.1 Cation Exchange Data of Heat Stressed Samples

Table S1 Summarized CEX Data of Heat Stressed Samples

Condition	Acidic	Main	Basic
pH7.4 T0	18.0	80.2	1.8
pH7.4 1M25C	24.0	74.5	1.5
pH7.4 2W40C	48.1	31.4	20.5
pH7.4 1M40C	64.8	15.8	19.4
pH6 T0	19.2	78.4	2.4
pH6 1M25C	24.6	72.8	2.5
pH6 2W40C	49.9	34.0	16.1
pH6 1M40C	56.5	12.9	30.6

Note: “M” means “month” and “C” means “Celsius degree”.

1.2 cIEF Data of Heat Stressed Sample

Table S2 Summarized cIEF Data of Heat Stressed Samples

Condition	Acidic	Main	Basic
pH7.4 T0	29.15	66.44	4.40
pH7.4 1M25C	33.53	62.44	4.03
pH7.4 2W40C	57.99	37.98	4.04
pH7.4 1M40C	75.17	21.25	3.56
pH6 T0	28.48	67.53	4.00
pH6 1M25C	33.63	62.81	3.56
pH6 2W40C	59.13	37.11	3.75
pH6 1M40C	77.68	19.60	2.74

Note: “M” means “month” and “C” means “Celsius degree”.

1.3 Intact Mass Analysis

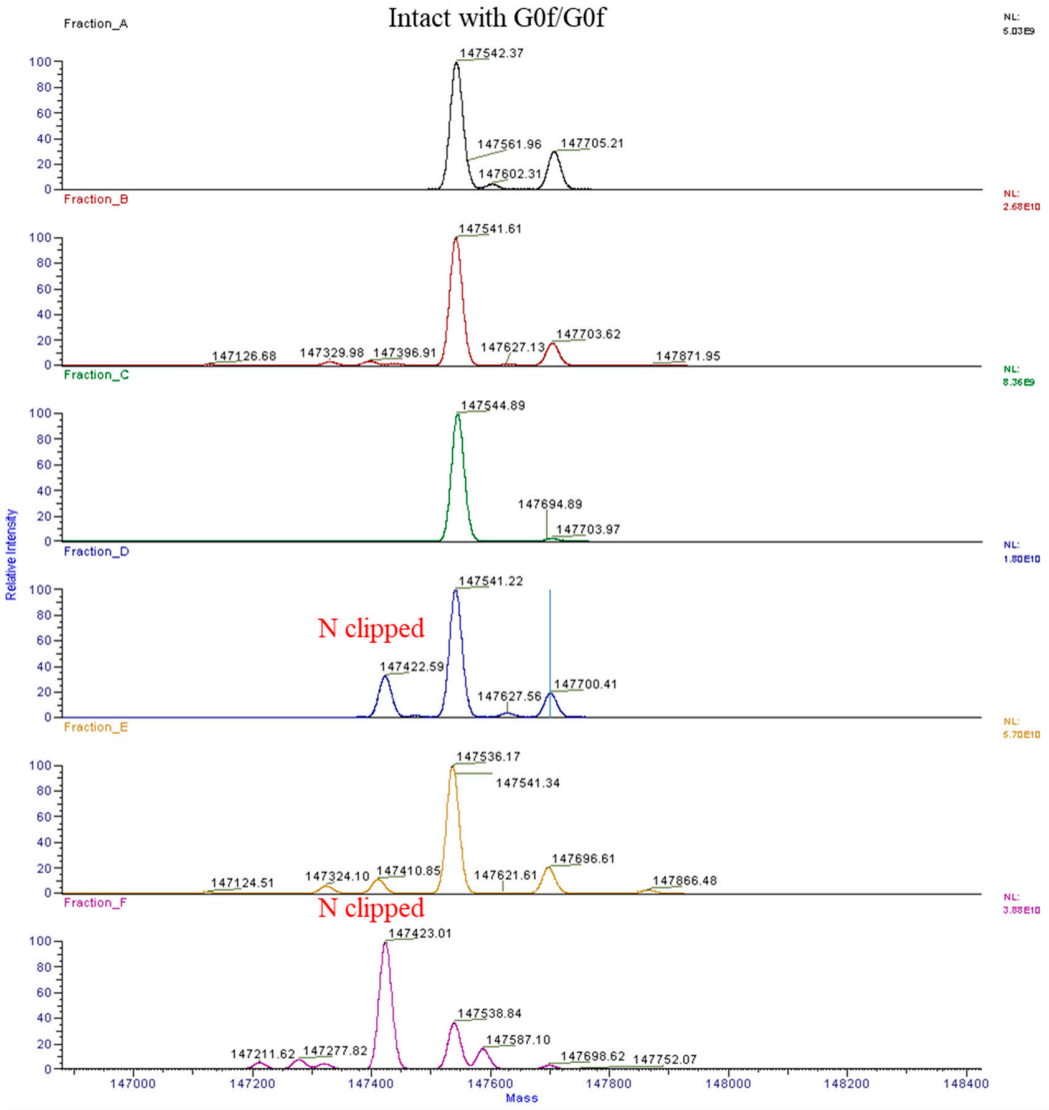


Figure S1 Intact Mass of CEX fractions

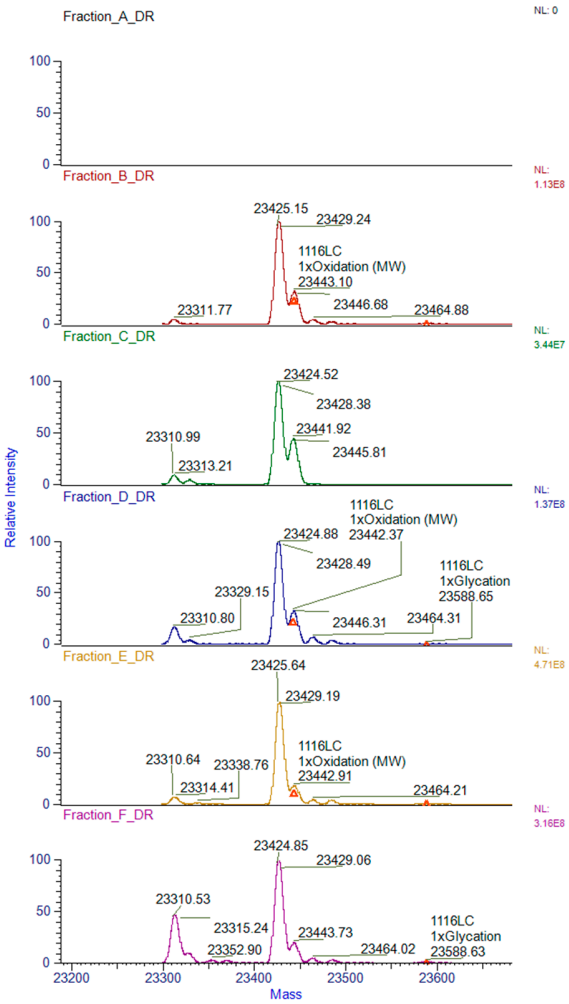


Figure S2 Reduced Light Chain Mass of CEX fractions

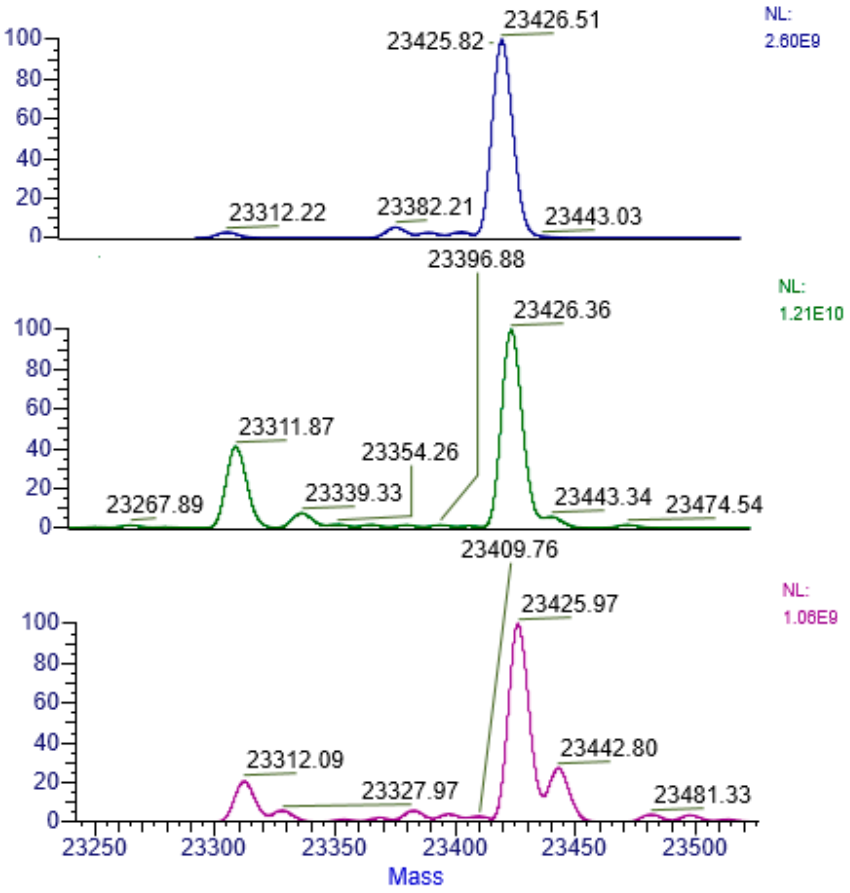


Figure S3 Clipping comparison between Drug Substance in final formulation and clarified medium by reduced intact mass analysis. (Top) Reference Standard; (Middle) 40C, 1 month sample in final formulation; (Bottom) 40C, 2 weeks sample in clarified medium.

1.4 Fractioning on Cation Exchange Chromatography

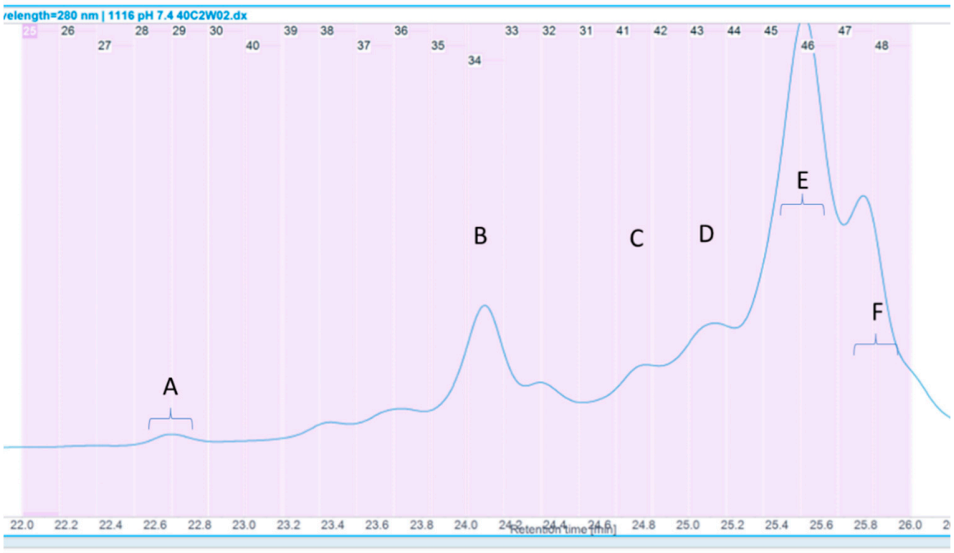


Figure S4 CEX fractionation

1.5 Aggregation Level Comparison

Table S3 Aggregation Level Comparison between different IgG molecules

	Aggregates level measured by SEC		
	mAb1	**mAb2**	**mAb3**
Control, T0	0.6	0.2	0.7
25°C, 1 m	NA	0.4	0.9
25°C, 3 m	0.8	0.5	1.2
25°C, 6 m	1	0.8	1.7
25°C, 12 m	1.3	NA	NA
40°C, 1 m	1.1	0.8	1.8
40°C, 3 m	1.8	1.5	3.6
40°C, 6 m	2.5	3.5	NA

mAb1 is corresponding to the molecule studied in the manuscript; NA = Not Available