

## **Supporting Information.**

### **A Multidimensional Analytical Comparison of Remicade and the Biosimilar Remsima.**

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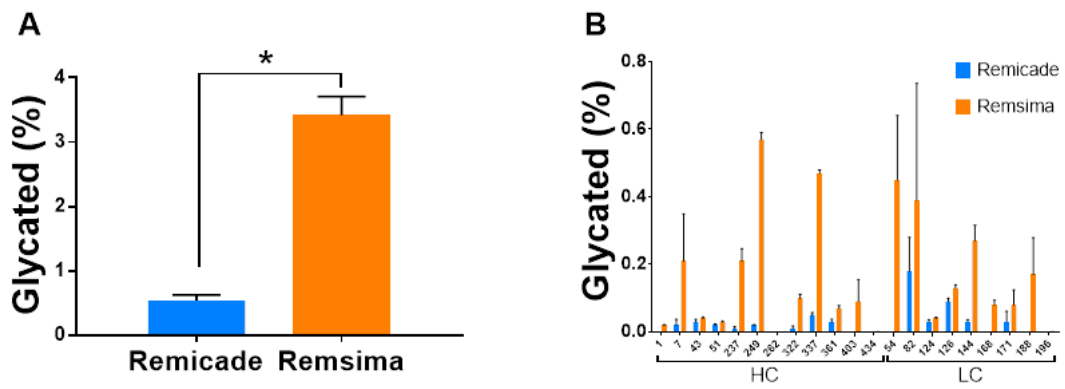
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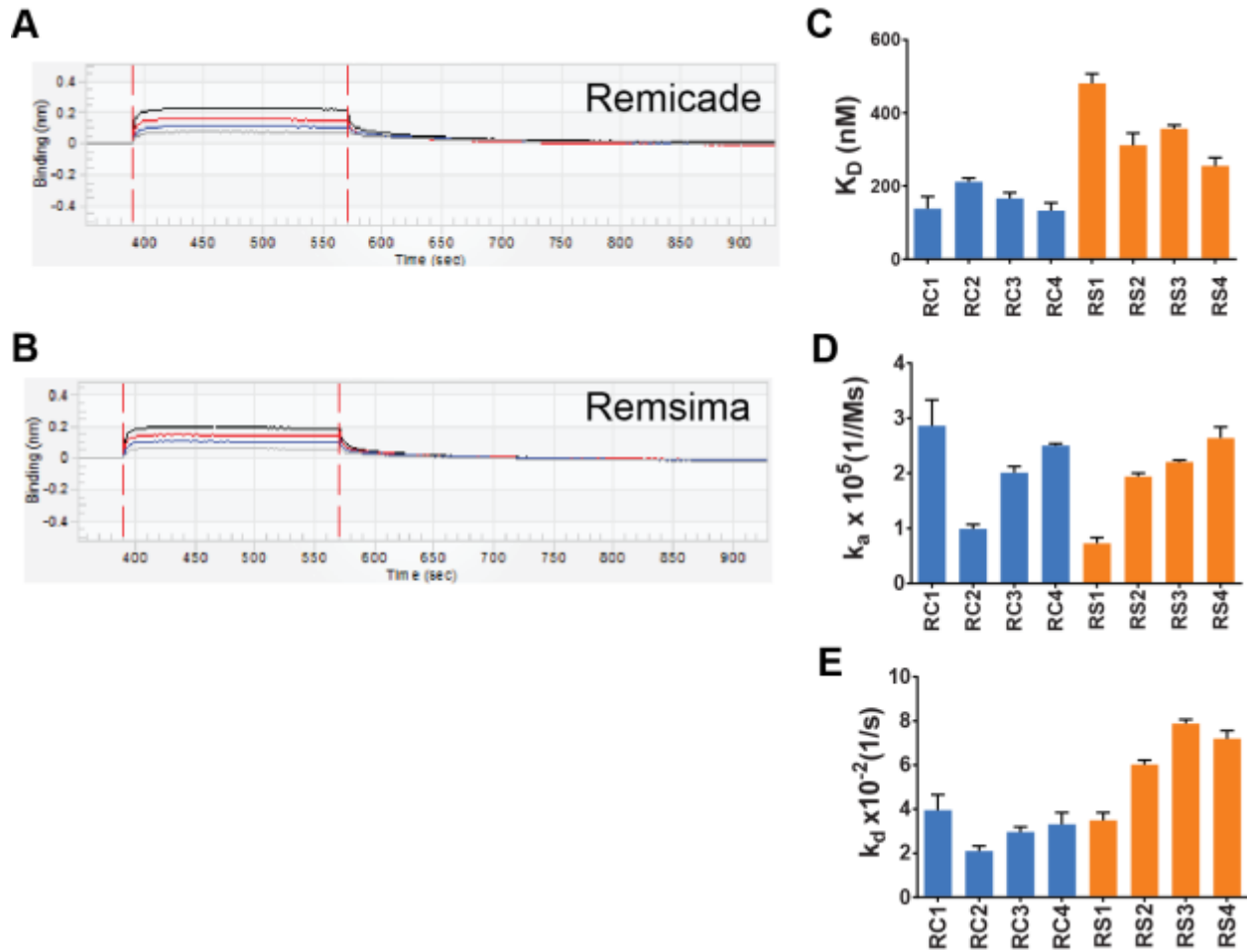
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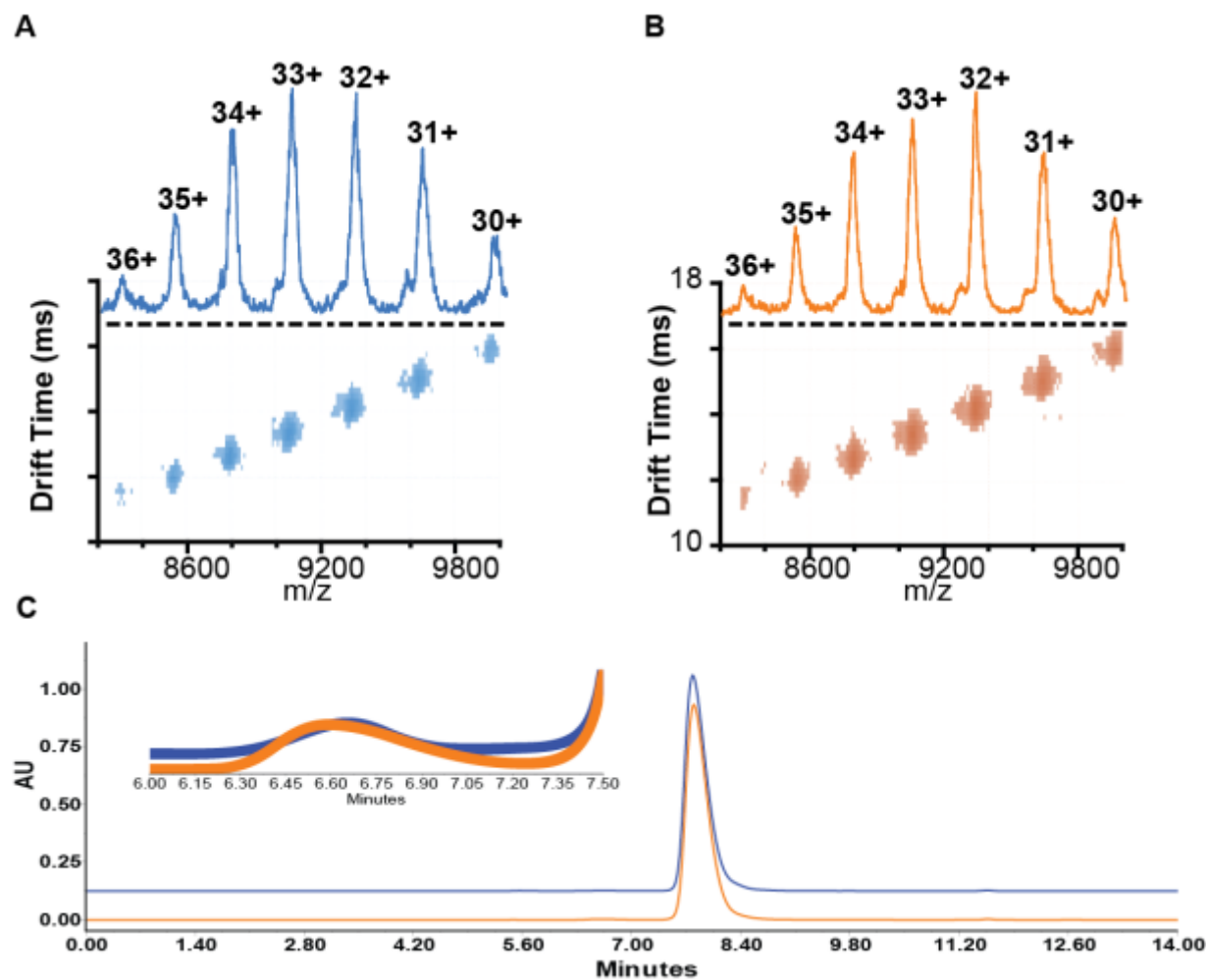
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**Figure S- 1: Glycation of Remicade and Remsima.** **A**, average sum of percent glycosylated peptides for Remicade and Remsima peptides after Glu-C digest **B**, Levels of glycation of specific Lys residues determined after Glu-C digest. (n= 4 lots each, average  $\pm$  S.D.)



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**Figure S- 3: Dimers of Remicade and Remsima.** Representative IM-MS spectra of dimer species of A, Remicade and B, Remsima with annotated charges. C, Representative size exclusion chromatography (SEC) profiles of Remicade (blue) and Remsima (orange). Inset shows the dimer peaks.

**Table S- 1: Intact Mass Analysis.**

	<b>Remicade</b>	<b>Remsima</b>	<b>P value</b>
Intact mass (kDa)	149382 ± 222	149695 ± 372	N.S.
Deglycosylated mass (kDa)	146066 ± 38	146076 ± 51	N.S.
% C-term (-) Lys	72.0 ± 3.5	62.0 ± 10.8	N.S.
% H or 2L	2.34 ± 0.57	0.09 ± 0.13	.001
% H1L1	0.09 ± 0.13	0.88 ± 0.32	.01
% H2	0.83 ± 0.10	1.36 ± 0.25	.02

**Table S- 2: Oxidations and deamidations of Remicade and Remsima.**

<b>Modification Name</b>	<b>Modification Site</b>	<b>Remicade</b>		<b>Remsima</b>	
		<b>Aver, %</b>	<b>Stdev, %</b>	<b>Aver, %</b>	<b>Stdev, %</b>
Oxidation	M-55	1.840	0.149	2.043	0.135
Oxidation	W-35	0.772	0.063	0.827	0.081
Oxidation	W-94	1.590	0.269	2.285	0.323
Oxidation	M-18	6.709	1.153	6.944	1.773
Oxidation	M-34	26.444	4.181	28.694	3.946
Oxidation	M-85	1.695	0.282	2.084	0.094
Oxidation	M-255	20.802	1.241	21.531	1.157
Oxidation	M-431	2.404	0.314	2.540	0.222
Oxidation	W-47	0.981	0.052	1.050	0.126
Oxidation	W-110	0.997	0.129	1.065	0.242
Oxidation	W-316	0.816	0.067	0.934	0.198
Deamidation	N-137	0.052	0.004	0.060	0.008
Deamidation	N-138	0.021	0.007	0.021	0.008
Deamidation	N-152	0.431	0.184	0.376	0.271
Deamidation	N-158	1.293	0.078	1.210	0.782
Deamidation	N-31	1.426	0.018	1.449	0.048
Deamidation	N-57	1.892	0.108	2.663	0.092
Deamidation	N-318	0.408	0.022	0.392	0.039
Deamidation	N-364	0.593	0.155	0.583	0.250
Deamidation	N-387	1.972	0.218	1.297	0.115
Deamidation	N-392	1.338	0.185	0.615	0.091
Deamidation	N-424	2.063	0.030	2.130	0.016

**Table S- 3: Glycan profiles for Remicade and Remsima.**

Modifications Name	Abbreviated Name	Remicade		Remsima	
		Average	Stdev	Average	Stdev
HexNAc(4)Hex(3)Fuc(1)	G0F	48.93%	1.85%	40.74%	0.45%
HexNAc(4)Hex(4)Fuc(1)	G1F	21.63%	2.09%	37.03%	0.55%
HexNAc(2)Hex(5)	Man 5	7.82%	0.85%	6.46%	0.43%
HexNAc(3)Hex(3)Fuc(1)	G0F-Man	6.10%	0.82%	1.60%	0.05%
HexNAc(3)Hex(5)	G0-Man(3)	3.89%	0.43%	0.40%	0.06%
HexNAc(4)Hex(5)Fuc(1)	G2F	2.99%	0.56%	6.41%	0.20%
HexNAc(3)Hex(3)	G0-GlcNAc	2.07%	0.23%	0.43%	0.03%
HexNAc(3)Hex(4)	G1-GlcNAc	1.71%	0.18%	0.22%	0.02%
HexNAc(4)Hex(3)	G0	1.47%	0.16%	0.68%	0.04%
HexNAc(4)Hex(5)Fuc(0)NeuAc(1)	G2S1	1.32%	0.29%	3.56%	0.53%
HexNAc(4)Hex(4)	G1	0.58%	0.14%	0.54%	0.10%
	Bisecting				
HexNAc(4)Hex(6)Fuc(1)	GlcNAc-F	0.32%	0.08%	0.50%	0.04%
HexNAc(2)Hex(4)	Man 4	0.16%	0.03%	0.11%	0.01%
HexNAc(2)Hex(6)	Man 6	0.18%	0.03%	0.21%	0.02%
HexNAc(4)Hex(5)Fuc(0)NeuAc(0)NeuGc(2)	G2N2	0.04%	0.07%	0.02%	0.03%
HexNAc(2)Hex(3)	Man 3	0.27%	0.09%	0.41%	0.04%
HexNAc(1)	Man 7	0.10%	0.01%	0.06%	0.02%
HexNAc(2)Hex(3)Fuc(1)	Man 3-F	0.09%	0.01%	0.01%	0.00%
HexNAc(2)Hex(7)	Man 7	0.07%	0.01%	0.08%	0.01%
HexNAc(2)Hex(5)Fuc(1)	Man 5-F	0.04%	0.01%	0.02%	0.01%
HexNAc(4)Hex(5)Fuc(1)NeuAc(0)NeuGc(2)	G2FN2	0.12%	0.05%	0.40%	0.10%
HexNAc(1)Fuc(1)	*	0.04%	0.01%	0.02%	0.00%
HexNAc(2)Hex(8)	Man 8	0.04%	0.01%	0.06%	0.01%
HexNAc(2)Hex(4)Fuc(1)	Man 4-F	0.02%	0.01%	0.00%	0.00%
HexNAc(4)Hex(5)Fuc(1)NeuAc(1)	G2FS1	0.03%	0.00%	0.05%	0.01%
HexNAc(2)Fuc(1)	*	0.00%	0.00%	0.01%	0.00%
HexNAc(4)Hex(5)Fuc(1)NeuAc(1)NeuGc(1)	G2FS1N1	0.00%	0.00%	0.01%	0.00%
HexNAc(4)Hex(5)Fuc(1)NeuAc(2)	G2FS2	0.00%	0.00%	0.00%	0.00%
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A-fucosylated		19.70%	1.57%	13.22%	3.75%
Mannose terminated		14.86%	1.53%	9.01%	3.11%
Immunogenic (NANA)		1.35%	0.29%	3.61%	1.32%
Anti-inflammatory (NGNA)		0.17%	0.03%	0.42%	0.18%



**Table S- 4: Relative Abundance (%) of Remicade and Remsima Aggregates.**

	<b>Remicade</b>	<b>Remsima</b>	<b>P value</b>
Dimer (SEC)	0.06 ± 0.01	0.37 ± 0.09	.001
Oligomer (SEC)	0.04 ± 0.03	0.03 ± 0.01	N.S.
Dimer (IM-MS)	0.78 ± 0.22	1.26 ± 0.99	N.S.