

Table S2a. Average gene expression values of the hemostatic and complement systems entities acquired from the analysis of microarray dataset (source: GEO accession GSE177477, Title: Type I interferon pathways in SARS-CoV-2-infected individuals from Pakistan)

S.no	Gene ID	Model genes symbol	Description of genes in the microarray expression dataset	Average symptomatic	Average normal
1.	TC0100007290.hg.1		complement C1q A chain (C1QA) ^a	5.766016649	5.441527489
2.	TC0100007292.hg.1		complement C1q B chain (C1QB) ^a	5.674930545	5.33326366
3.	TC0100007291.hg.1		complement C1q C chain (C1QC) ^a	6.578637501	5.931605926
		C1q	Assumed mean value of C1QA, C1QB and C1QC	6.006528232	5.568799025
4.	TC1200012744.hg.1	C1r	complement C1r (C1R)	2.789566056	2.717710458
5.	TC1200012592.hg.1	C1s	complement C1s (C1S)	3.067417806	3.050936823
6.	TC0600014105.hg.1	C2	complement C2	6.169682911	5.983513771
7.	TC1900009443.hg.1	C3	complement C3	5.205237102	5.051191456
8.	TC0600007628.hg.1	C4b	complement C4B (C4B)	5.484938717	5.703110477
9.	TC0600007628.hg.1	C4a	complement C4A (C4A)	5.484938717	5.703110477
10.	TC0900011394.hg.1	C5	complement C5	3.85969341	4.266834172
11.	TC0500010592.hg.1	C6	complement C6	4.003036475	4.082914683
12.	TC0500007238.hg.1	C7	complement C7	3.228319779	3.525506561
13.	TC0100008454.hg.1		complement C8 alpha chain (C8A) ^a	3.088029143	3.116979119
14.	TC0900009247.hg.1		complement C8 gamma chain (C8G) ^a	5.098091152	4.91679831
		C8	Assumed mean value of C8A and C8G	4.093060148	4.016888715
15.	TC0500013300.hg.1	C9	complement C9	3.455719368	3.02688555

16.	TC0100011397.hg.1		complement component 4 binding protein beta (C4BPB) ^a	2.729762065	2.491267509
17.	TC0100011402.hg.1		complement component 4 binding protein alpha(C4BPA) ^a	4.507298229	4.467124573
		C4BP	Assumed mean value of C4BPA and C4BPB	3.618530147	3.479196041
18.	TC0300013461.hg.1	MASP1	MBL associated serine protease 1	4.760726973	4.545585038
19.	TC0100012868.hg.1	MASP2	MBL associated serine protease 2	4.426790654	4.376543657
20.	TC0500012965.hg.1	MBL	lectin, mannose binding 2 (LMAN2)	8.665749334	8.527253909
21.	TC1200009807.hg.1	C3aR1	complement C3a receptor 1 (C3AR1)	7.705047159	6.761735891
22.	TC1900011770.hg.1	C5aR1	complement C5a receptor 1 (C5AR1)	10.16623494	9.970222126
23.	TC0100011064.hg.1	FH	complement factor H (CFH)	3.711950407	3.906269206
24.	TC0600014106.hg.1	FB	complement factor B (CFB)	2.768328985	2.455255566
25.	TC0400011580.hg.1	FI	complement factor I (CFI)	4.079502469	3.780938586
26.	TC1900006494.hg.1	PFD	complement factor D (CFD)	6.597460437	6.375797414
27.	TC0X00009580.hg.1	P	complement factor properdin (CFP)	7.061182572	7.366588348
28.	TC0100011406.hg.1	DAF	CD55 molecule/Decay accelerating factor (CD55)	11.44265642	11.27302089
29.	TC0100011414.hg.1	CR1	complement C3b/C4b receptor 1 (Knops blood group)	9.94664775	9.121356826
30.	TC0700006890.hg.1	IL-6	interleukin 6	3.578358241	2.921238268
31.	TC1400010563.hg.1	IgG	immunoglobulin heavy variable 5-78 (IGHV5-78) (pseudogene)	4.822236599	5.091758207
32.	TC1100007684.hg.1	C1-INH	serpin family G member 1; SERPING1 produce C1-INH	4.71138401	5.354422324
33.	TC1100013161.hg.1	CD59	CD59 molecule (CD59 blood group)	7.617894872	6.59121831

34.	TC0500012971.hg.1	F12	coagulation factor XII	5.956006529	5.967694807
35.	TC0400009551.hg.1	F11	coagulation factor XI	4.121960712	4.020726337
36.	TC1300008109.hg.1	F10	coagulation factor X	5.684616975	5.563305824
37.	TC0X00008578.hg.1	F9	coagulation factor IX	2.261295916	2.394016489
38.	TC1300008108.hg.1	F7	coagulation factor VII	6.213601721	5.955238006
39.	TC0X00008874.hg.1		coagulation factor VIII associated 2(F8A2) ^a	8.479164615	8.676219291
40.	TC0X00008874.hg.1		coagulation factor VIII associated 3(F8A3) ^a	8.479164615	8.676219291
41.	TC0X00008874.hg.1		coagulation factor VIII associated 1(F8A1) ^a	8.479164615	8.676219291
		F8	Assumed mean value of F8A1, F8A2 and F8A3	8.479164615	8.676219291
42.	TC0100016356.hg.1	F5	coagulation factor V	7.43315821	5.906725668
43.	TC1100007463.hg.1	F2	coagulation factor II, thrombin	5.153948356	5.053519954
44.	TC0100014988.hg.1	F3	coagulation factor III, tissue factor	4.979708717	4.298106767
45.	TC0400012181.hg.1	F1	fibrinogen alpha chain (FGA)	3.207277987	3.267204417
46.	TC0100016445.hg.1	AT3	serpin family C member 1 (SERPINC1)	2.803441006	2.663167435
47.	TC0200015194.hg.1	TFPI	tissue factor pathway inhibitor	4.791216244	3.120922171
48.	TC1200009847.hg.1	A2M	alpha-2-macroglobulin	4.553430733	5.167942675
49.	TC0600010085.hg.1	Pg	Plasminogen (PLG)	4.291519448	4.536142732
50.	TC1900011223.hg.1	KAL	Kallikrein (KLK)	4.858593207	4.774580567
51.	TC0400012875.hg.1	Pre-KAL	kallikrein B1 (KLKB1)	3.289896258	3.409488905

52.	TC0800010275.hg.1	tPA	plasminogen activator, tissue type (PLAT)	6.859149007	6.357348869
53.	TC1400010647.hg.1	B2R	bradykinin receptor B2 (BDKRB2)	4.155524838	4.046332648
54.	TC0300009777.hg.1	HK	High molecular weight kininogen (HK); Kininogen 1 (KNG1)	2.733984514	2.452658997
55.	TC0700008582.hg.1	PAI-1	Plasminogen activator inhibitor-1 known as Serpin family E member 1 belong to SERPINE1.	4.611072364	4.09542592

Table S2b. Concentration of the entities explored from experimental studies and estimation.

S. no	Model genes symbol	Description	Concentration
1.	CoV2S	Assay: S-Protein samples [S1], [S2] and [S3] = 5, 20, 80 ($\frac{\text{pg}}{\text{mL}}$), respectively. Consider average value for $[\text{CoV2S}]^b = 35 \frac{\text{pg}}{\text{mL}}$ [1].	1.942855×10^{-9}
2.	CoV2N	Assay: N-Protein samples [N1], [N2] and [N3] = 8, 80, 800 ($\frac{\text{pg}}{\text{mL}}$), respectively. Consider average value for $[\text{CoV2N}]^b = 296 \frac{\text{pg}}{\text{mL}} = [1]$.	1.643096×10^{-8}
3.	CoV2M	Assumption for [CoV2M].	1.0×10^{-12}
4.	CoV2E	Assumption for [CoV2E].	1.0×10^{-12}
5.	gC1qR	Range of concentration [gC1qR], 0.0 to 5.0 ($\frac{\mu\text{g}}{\text{mL}}$) [2]. Assumed $[\text{gC1qR}]^c = 2.5 \frac{\mu\text{g}}{\text{mL}}$.	1.38775×10^{-7}
6.	TAFI	Normal values of [TAFI] is 1.76 to 28.9 ($\frac{\text{ng}}{\text{mL}}$) [3]. Assumed $[\text{TAFI}]^d = 15.345 \frac{\text{ng}}{\text{mL}}$.	8.52×10^{-7}
7.	TAFIa	For Activated TAFI, $[\text{TAFIa}]^d = 60.2 \frac{\text{ng}}{\text{mL}}$ [3].	3.341702×10^{-6}
8.	Glu-Pg	The expression of Glu-Plasminogen [Glu-Pg] is taken same as the value for [Pg] available in the microarray expression data that is $[\text{Pg}] = 4.291519448$.	4.291519448
9.	Lys-Pg	Assumption for Lys-Plasminogen (Lys-Pg) expression [Lys-Pg] based on the [Pg].	5.291519448
10.	BK	Assumption for [BK] based on the expression of bradykinin receptor B2 (B2R)	3.046332648

➤ **Mathematical calculation**

(b) $[\text{CoV2S}] = 35 \frac{\text{pg}}{\text{mL}} = 35 \frac{\text{ng}}{\text{L}} = (35 \times 10^{-9})(0.05551) \frac{\text{Mol}}{\text{L}} = 1.942855 \times 10^{-9} \text{ M}$. Implies $35 \frac{\text{pg}}{\text{mL}} = 1.942855 \times 10^{-9} \text{ M}$

$[\text{CoV2N}] = 296 \frac{\text{pg}}{\text{mL}} = 16.43096 \times 10^{-9} \text{ M}$.

(c) $[\text{gC1qR}] = 2.5 \frac{\mu\text{g}}{\text{mL}} = 0.138775 \times 10^{-6} \text{ M}$.

(d) $[\text{TAFI}] = 15.345 \frac{\text{ng}}{\text{mL}} = 15.345 \frac{\mu\text{g}}{\text{L}} = 0.852 \times 10^{-6} \text{ M}$.

$[\text{TAFIa}] = 60.2 \frac{\text{ng}}{\text{mL}} = 60.2 \frac{\mu\text{g}}{\text{L}} = 3.341702 \times 10^{-6} \text{ M}$.

- As, $1\text{g} = 0.05551 \text{ mol}$.
- $\frac{\text{Mol}}{\text{L}}$ can be taken in molarity (M).

References

- [1] Q. Cai *et al.*, “Simultaneous detection of the spike and nucleocapsid proteins from SARS-CoV-2 based on ultrasensitive single molecule assays,” *Anal. Bioanal. Chem.*, vol. 413, no. 18, pp. 4645–4654, 2021, doi: 10.1007/s00216-021-03435-z.
- [2] A. G. Savitt *et al.*, “SARS-CoV-2 Exacerbates COVID-19 Pathology Through Activation of the Complement and Kinin Systems,” *Front. Immunol.*, vol. 12, no. November, pp. 1–11, 2021, doi: 10.3389/fimmu.2021.767347.
- [3] C. Nougier *et al.*, “Hypofibrinolytic state and high thrombin generation may play a major role in SARS-COV2 associated thrombosis,” *J. Thromb. Haemost.*, vol. 18, no. 9, pp. 2215–2219, 2020, doi: 10.1111/jth.15016.