Supplementary Material

Supplementary Table S1 Fibrin clot properties of individual samples

Total fibrinogen concentration (g/L)	Maximum absorbance Δau	Fiber diameter (nm)	Lag time (min)	Slope (au/s)	Clot lysis time (min)	Permeability (K_s) (cm^2)	Storage modulus (G') (Pa)	Loss modulus (G") (Pa)	Tan (delta) (G'/G'')
2.40	0.28	162	4.00	2.17	49.3	13.2×10^{-9}	14.2	0.68	0.05
2.40	0.56	186	4.41	5.43	64.1	12.6×10^{-9}	133	5.25	0.04
3.08	0.38	161	3.50	3.78	65.9	13.0×10^{-9}	31.8	1.27	0.04
3.09	0.83	203	4.05	10.3	68.3	11.8×10^{9}	52.8	2.16	0.04
3.67	0.39	200	3.91	6.34	68.1	11.9×10^{-9}	23.4	1.28	0.07
3.65	0.68	188	3.79	9.52	60.9	9.73×10^{-9}	84.2	3.11	0.04
3.83	0.46	189	2.92	12.0	70.9	9.5×10^{-9}	45.2	1.82	0.04
3.78	0.84	185	5.37	12.4	75.7	9.0×10^{-9}	102	3.94	0.06
4.00	0.58	167	4.41	6.88	60.4	12.6×10^{-9}	91.5	3.32	0.04
3.99	0.81	188	3.88	10.0	75.3	8.69×10^{-9}	142	5.12	0.04
4.05	0.58	162	3.89	9.55	54.9	5.20×10^{-9}	35.1	1.74	0.07
4.02	0.82	171	4.3	11.1	59.0	7.6×10^{-9}	40.5	2.07	0.07
4.07	0.47	195	3.10	21.5	57.7	11.3×10^{-9}	15.4	0.81	0.06
4.07	0.83	214	3.98	9.07	64.0	7.22×10^{-9}	180	6.89	0.05
4.15	0.50	195	3.71	6.13	55.4	11.8×10^{-9}	42.0	2.92	0.08
4.17	0.82	196	4.68	12.9	62.0	10.2×10^{-9}	146	5.00	0.04
4.21	0.54	182	3.98	8.38	45.0	5.79×10^{-9}	80.0	3.35	0.05
4.25	0.88	172	4.88	14.8	66.2	7.36×10^{-9}	88.9	3.18	0.04
4.24	0.48	165	3.55	12.5	62.4	7.99×10^{-9}	14.7	0.85	0.07
4.25	0.93	196	5.04	10.4	67.1	9.06×10^{-9}	97.6	3.65	0.04
4.39	0.60	206	4.87	10.6	60.7	11.3×10^{-9}	16.8	1.07	0.07
4.38	0.93	225	5.37	14.4	62.9	9.7×10^{-9}	40.9	1.69	0.05
4.4	0.50	214	3.50	5.48	62.4	18.1×10^{-9}	59.6	2.19	0.04
4.43	1.03	206	3.97	15.9	78.1	6.04×10^{-9}	42.7	1.80	0.06
4.51	0.57	194	4.75	5.48	53.8	12.0×10^{-9}	52.9	1.98	0.04
4.51	0.93	167	5.15	12.7	76.0	6.11×10^{-8}	171	6.34	0.05
5.02	0.70	188	4.02	8.13	50.1	11.3×10^{-9}	26.4	1.02	0.04
5.03	0.95	220	4.13	13.4	65.5	5.39×10^{-9}	78.3	3.08	0.05
6.39	1.07	203	5.02	16.3	65.2	5.87×10^{-9}	209	8.31	0.05
6.34	1.32	218	3.27	25.5	91.4	3.06×10^{-9}	273	12.4	0.05

Abbreviations: Δau, change in absorbance units; au/s, absorbance unit per second; K_s, permeability coefficient.

Supplementary Table S2 Correlation of other measured biochemical variables with maximum absorbance, fiber diameter, and fibrinogen concentration

Variable	Maximum absorbance		Fiber diameter		Fibrinogen concentration	
	r	*p*	*r*	*p*	*r*	*p*
LDL-C (mmol/L)	0.46	0.01	0.17	0.36	0.18	0.34
HDL-C (mmol/L)	−0.32	0.08	−0.38	0.04	−0.41	0.02
CRP (mg/L)	0.47	0.008	0.15	0.44	0.56	0.001
Total cholesterol (mmol/L)	0.35	0.06	0.02	0.93	0.07	0.71
Triglycerides (mmol/L)	−0.02	0.91	−0.03	0.88	−0.05	0.80
Glucose (mmol/L)	0.23	0.24	0.12	0.53	0.21	0.27
Albumin (g/L)	−0.02	0.92	0.09	0.64	−0.10	0.62
Creatinine (μmol/L)	0.05	0.78	−0.16	0.39	0.02	0.91
Systolic blood pressure (mm Hg)	−0.11	0.58	0.10	0.58	−0.13	0.48
Diastolic blood pressure (mm Hg)	−0.08	0.66	0.16	0.40	−0.17	0.36
Body mass index (kg/m^2)	0.21	0.27	0.06	0.78	0.01	0.97

Abbreviations: CRP, C-reactive protein; HDL-C, high-density lipoprotein cholesterol; LDL-C, low-density lipoprotein cholesterol.

Relationship between Absorbance Measurements and Turbidimetry

In an absorbance measurement, the incident light intensity I_0 and transmitted light intensity I_t are measured. The absorbance, A, is then defined as

$$A = \log\left(\frac{I_0}{I_t}\right) \qquad \text{(S1)}$$

where log is the common (base 10) logarithm. Absorbance may be measured at a single wavelength or over a range of wavelengths using a spectrophotometer. Absorbance includes all mechanism of light attenuation by a sample, including absorption, scattering, reflection, and other physical processes. The path length l, over which the light is attenuated, is typically 1 cm.

In turbidimetry, light scattering is the only process of light attenuation through a sample, while all other processes (absorption, reflection, others) are ignored. Thus, in this case, the transmitted light intensity is

$$I_t = I_0 - I_s \qquad \text{(S2)}$$

where I_s is the scattered light intensity. Factoring out I_0 gives

$$I_t = I_0(1 - \frac{I_s}{I_0}) \qquad \text{(S3)}$$

Turbidity is defined as the ratio of the scattered light intensity to the incident light intensity,

$$\tau = \frac{I_s}{I_0} \qquad \text{(S4)}$$

Plugging Eq. (S4) into Eq. (S3), and solving for τ gives

$$\tau = 1 - \frac{I_t}{I_0} \qquad \text{(S5)}$$

Using Eq. (S1), this yields

$$\tau = 1 - 10^{-A} \qquad \text{(S6)}$$

which is the relationship between the turbidity and the absorbance. Using base e and the natural logarithm, this can be rewritten as

$$\tau = 1 - e^{-A\cdot\ln 10} \qquad \text{(S7)}$$

Using the Taylor expansion for $e^{-x} = 1 - \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} \pm \cdots$ and only keeping the liner term, which is a good approximation when $A \cdot \ln 10 \ll 1$, yields for a standard path length of 1 cm

$$\tau = A \cdot \ln 10 \qquad \text{(S8)}$$

This equation is valid if the dominating process of light attenuation is light scattering, and for low absorbance values ($A \cdot \ln 10 \ll 1$), which can be achieved using dilute solutions and/or short path lengths. If a path length different from 1 cm is used, Eq. (S8) needs to be modified to

$$\tau = l \cdot A \cdot \ln 10 \qquad \text{(S9)}$$

where l is the path length in cm.

The significance of this equation is that the turbidity can be easily determined experimentally from absorbance measurements (under the stated conditions). These turbidity measurements can then be compared with predictions from theoretical equations for turbidity that are derived from light scattering theory, for example, Eq. (1).