

A Ready Reckoner for the Calculation of Geometric Mean Antibody Titres

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Antibody titrations involve the use of serum dilutions and almost invariably the geometric mean antibody titre calculated for a group of sera gives useful data. The calculation of such geometric mean titres can be both time consuming and tedious, but it can be greatly facilitated by the use of a 'ready reckoner'. Table 1 gives the logarithmic values to base 10 of the reciprocals of serum

Table 1. *Logarithmic values of antibody titres and their multiples*

Antibody titre	Log ₁₀	Multiples of log ₁₀								
		<i>x</i> ²	<i>x</i> ³	<i>x</i> ⁴	<i>x</i> ⁵	<i>x</i> ⁶	<i>x</i> ⁷	<i>x</i> ⁸	<i>x</i> ⁹	<i>x</i> ¹⁰
2	0.3010	0.6020	0.9030	1.2040	1.5050	1.8060	2.1070	2.4080	2.7090	3.0100
4	0.6021	1.2042	1.8063	2.4084	3.0105	3.6126	4.2147	4.8168	5.4189	6.0210
6	0.7782	1.5564	2.3346	3.1128	3.8910	4.6692	5.4474	6.2256	7.0038	7.7820
8	0.9031	1.8062	2.7093	3.6124	4.5155	5.4186	6.3217	7.2248	8.1279	9.0310
12	1.0792	2.1584	3.2376	4.3168	5.3960	6.4752	7.5544	8.6336	9.7128	10.7920
16	1.2041	2.4082	3.6123	4.8164	6.0205	7.2246	8.4287	9.6328	10.8369	12.0410
24	1.3802	2.7604	4.1406	5.5208	6.9011	8.2812	9.6614	11.0416	12.4218	13.8020
32	1.5051	3.0102	4.5153	6.0204	7.5255	9.0306	10.5357	12.0408	13.5459	15.0510
48	1.6812	3.3624	5.0436	6.7248	8.4060	10.0872	11.7684	13.4496	15.1308	16.8120
64	1.8062	3.6124	5.4186	7.2248	9.0310	10.8372	12.6434	14.4496	16.2558	18.0620
96	1.9823	3.9646	5.9469	7.9292	9.9115	11.8938	13.8761	15.8584	17.8407	19.8230
128	2.1072	4.2144	6.3216	8.4288	10.5360	12.6432	14.7504	16.8576	18.9648	21.0720
192	2.2833	4.5666	6.8499	9.1332	11.4165	13.6998	15.9831	18.2664	20.5497	22.8330
256	2.4082	4.8164	7.2246	9.6328	12.0410	14.4492	16.8574	19.2656	21.6738	24.0820
384	2.5843	5.1686	7.7529	10.3372	12.9215	15.5058	18.0901	20.6744	23.2587	25.8430
512	2.7093	5.4186	8.1279	10.8372	13.5465	16.2558	18.9651	21.6744	24.3837	27.0930
768	2.8854	5.7708	8.6562	11.5416	14.4270	17.3124	20.1978	23.0832	25.9686	28.8540
1024	3.0103	6.0206	9.0309	12.0412	15.0515	18.0618	21.0721	24.0824	27.0927	30.1030
1536	3.1864	6.3728	9.5592	12.7456	15.9320	19.1184	22.3048	25.4912	28.6776	31.8640
2048	3.3113	6.6226	9.9339	13.2452	16.5565	19.8678	23.1791	26.4904	29.8017	33.1130
3072	3.4874	6.9748	10.4622	13.9496	17.4370	20.9244	24.4118	27.8992	31.3866	34.8740
4096	3.6123	7.2246	10.8369	14.4492	18.0615	21.6738	25.2861	28.8984	32.5107	36.1230

dilutions, together with their multiples. Thus, if in a group of twenty sera, each of two have antibody titres of 8, 32, 128 and 512 and each of four have titres of 64, 256 and 2048, the geometric mean titre for the group may be calculated as shown on p. 541.

No. of sera		Antibody titre	Log ₁₀
2	at	8	1·8062
2	at	32	3·0102
4	at	64	7·2248
2	at	128	4·2144
4	at	256	9·6328
2	at	512	5·4186
4	at	2048	13·2452
Total	20	—	44·5522

$$\text{Log}_{10} \text{ geometric mean titre} = \frac{44\cdot5522}{20} = 2\cdot2276.$$

$$\text{Geometric mean titre} = 169.$$

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