

TABLE III
Normal Values of Morphometric Parameters for Rat Liver Uncorrected for Systematic Errors

Component	Parameter		Density per 1 ml of tissue		SE in % of mean	Dimension	Specific value per 100 g body wt		Value per "hepatocyte" (mononuclear)
	Symbol		Mean	SE			Mean	Dimension	
Liver	Volume	V _L					3.36	cm ³	
Lobular parenchyma	Volume	V _P	0.96	0.005	0.5	cm ³ /cm ³	3.22	cm ³	
Extrahepatic space	Volume	V _s	0.169	0.005		cm ³ /cm ³	0.57	cm ³	
Extralobular	Volume	V _{xe}	0.04		10	cm ³ /cm ³	0.14	cm ³	
Intralobular	Volume	V _x	0.129	0.012	10	cm ³ /cm ³	0.43	cm ³	
Nuclei	Number	N _{nx}	92 × 10 ⁶	9 × 10 ⁵	10	cm ⁻³	309 × 10 ⁶		
Hepatocytes	Volume	V _h	0.831	0.012	1.5	cm ³ /cm ³	2.79	cm ³	4940 μ ³
Surface	S _h		0.284	0.014	5	m ² /cm ³	0.96	m ²	1680 μ ²
Nuclei	Volume	V _n	0.050	0.0025	5	cm ³ /cm ³	0.17	cm ³	300 μ ³
Number	N _n		169 × 10 ⁶	9 × 10 ⁵	5	cm ⁻³	568 × 10 ⁶		1
Cytoplasm	Volume	V _c	0.771	0.013	1.7	cm ³ /cm ³	2.59	cm ³	4640 μ ³
Cytoplasmic ground substance	Volume	V _{gs}	0.444	0.017	4	cm ³ /cm ³	1.49	cm ³	2630 μ ³
Endoplasmic reticulum	Volume*	V _{er}	0.128	0.0088	7	cm ³ /cm ³	0.427	cm ³	756 μ ³
Surface*	S _{er}		10.90	0.70	6	m ² /cm ³	36.5	m ²	63000 μ ²
Rough ER	Volume*	V _{rer}	0.0785	0.0069	9	cm ³ /cm ³	0.264	cm ³	467 μ ³
Surface*	S _{rer}		6.25	0.52	8	m ² /cm ³	20.93	m ²	37900 μ ²
Bound ribosomes	Number*	N _{rib}	20.9 × 10 ¹⁴	2.1 × 10 ¹⁴	10	cm ⁻³	70 × 10 ¹⁴		12.7 × 10 ⁶
Smooth ER	Volume*	V _{ser}	0.049	0.0050	10	cm ³ /cm ³	0.163	cm ³	289 μ ³
Surface*	S _{ser}		4.65	0.55	12	m ² /cm ³	15.61	m ²	25100 μ ²
Mitochondria	Volume	V _{mi}	0.181	0.0045	2	cm ³ /cm ³	0.66	cm ³	1170 μ ³
Number	N _{mi}		280 × 10 ⁹	10 × 10 ⁹	3	cm ⁻³	941 × 10 ⁹		1665
Envelope	Surface	S _{me}	1.46	0.04	3	m ² /cm ³	4.91	m ²	7450 μ ²
Inner membrane + cristae	Surface‡	S _{me}	5.88	0.51	9	m ² /cm ³	19.74	m ²	34800 μ ²
Microbodies	Volume	V _{mb}	0.0116	0.0006	5	cm ³ /cm ³	0.038	cm ³	67 μ ³
Number	N _{mb}		62 × 10 ⁹	9 × 10 ⁹	14	cm ⁻³	209 × 10 ⁹		370
Dense bodies	Volume	V _{db}	0.0068	0.00044	6	cm ³ /cm ³	0.023	cm ³	41 μ ³

* Underestimates by 20-30%; approximate correction factor 1.25.

‡ Underestimate by 50%; approximate correction factor 1.5.