

TABLE 1

ADIPOCYTE VOLUME, INSULIN BINDING, INTERNALIZATION AND DEGRADATION AND INSULIN RECEPTOR DOWN-REGULATION IN ADIPOCYTES FROM YOUNG AND OLD RATS

	Young	Old	
		Small	Large
Serum insulin (ng/ml)	1.67 ± 0.84	1.10 ± 0.21	
Adipocyte volume (pl)	154.00 ± 20.00	200.00 ± 14.00	813.00 ± 41.00 ***
Insulin receptors:			
Number per cell × 10 ⁻³	138.00 ± 12.00	184.00 ± 36.00	251.00 ± 50.00 *
Number per μm ²	9.50 ± 0.90	10.70 ± 2.10	5.10 ± 0.80 *
Insulin internalization:			
(a) No additions			
Insulin bound (pg/10 ⁵ cells)	4.53 ± 0.87	4.25 ± 0.56	10.00 ± 2.88
Insulin internalized (pg/10 ⁵ cells)	1.27 ± 0.20	1.15 ± 0.11	3.17 ± 0.41 **
% internalized	31.00 ± 4.00	29.00 ± 4.00	39.00 ± 9.00
(b) Plus bacitracin and chloroquine			
Insulin bound (pg/10 ⁵ cells)	6.09 ± 1.84	5.05 ± 1.16	14.53 ± 1.21 **
Insulin internalized (pg/10 ⁵ cells)	1.98 ± 0.62	1.67 ± 0.38	6.23 ± 0.80 **
% internalized	34.00 ± 5.00	36.00 ± 9.00	42.00 ± 2.00
Receptor internalization (down-regulation)			
Insulin bound (pg/10 ⁵ cells)			
Cultured without insulin	5.44 ± 1.06	6.56 ± 1.71	12.39 ± 1.39 **
Cultured with 10 ⁻⁷ M insulin	3.12 ± 0.83 †	2.40 ± 0.63 ††	8.51 ± 1.39 *††
Extracellular insulin degradation:			
pg/10 min/10 ⁵ cells	26.00 ± 5.00	20.00 ± 7.00	200.00 ± 46.00 **
pg/10 min/cm ²	1.60 ± 0.20	0.90 ± 0.30	3.90 ± 0.80 *
Intracellular insulin degradation:			
pg/10 min/10 ⁵ cells	1.10 ± 0.20	0.60 ± 0.10	10.90 ± 2.40 **
pg/10 min/cm ²	0.09 ± 0.01	0.05 ± 0.01 *	0.17 ± 0.03 *

Values are mean ± SEM of 4-20 observations. * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$ compared with young rats. † $P < 0.05$, †† $P < 0.01$ compared with culture in the absence of insulin (Student's *t*-test).