

COMPOSITION OF MARSUPIAL PLASMA LIPOPROTEINS

J.B.KEMP, D.C.K.ROBERTS and L.A.HINDS

A previous study reported the lipoprotein patterns of the Tammar wallaby (Florence et al. 1982). This study reports the patterns of several other marsupials (Western Grey kangaroo, Red Necked wallaby, Eastern wallaroo and Possum). Blood was collected from the tail vein of several non fasting male(m) and female(f) marsupials, and plasma separated and stored on ice for no longer than 24 h before analysis. Each of the samples were used for analytical ultracentrifugation to determine the density distribution of the lipoproteins. The samples were then separated in a preparative ultracentrifuge by a discontinuous density-gradient method and the isolated lipoprotein classes analysed for total cholesterol (C), phospholipid (P), protein (PR) and triacylglycerol (T).

For a given lipoprotein class the mid flotation rate varied between species but fell within similar density ranges for VLDL (<1.006g/ml), LDL (1.006-1.054g/ml) and HDL(1.054-1.21g/ml). Total low-density lipoprotein could be further subdivided into intermediate density lipoprotein(IDL, 1.006-1.019g/ml) and low density lipoprotein(LDL, 1.019-1.054 g/ml).

The marsupials were found to have HDL as the major lipoprotein class. Of the total circulating lipoproteins the proportions of the different classes varied between species with HDL accounting for 46%-56% of the total, and smaller proportions of LDL(18%-25%),IDL(11%-17%) and VLDL(12%-15%). Most of the cholesterol, phospholipid and protein were found in HDL, while VLDL carried most of the triacylglycerol. In comparison to many eutherian mammals, marsupial HDL was found to contain a greater percentage of triacylglycerol (Table).

% Composition of Marsupial Lipoproteins(Mean±SEM for Tammar wallaby)

	Tammar wallaby		Western G.		Red Neck W.		Eastern Possum							
	m(5)		f(1)		m(1)		f(1)							
	C	T	C	T	C	T	C	T						
VLDL	1± 0.3	45±3.0	8	45	10	40	8	41	10	45	4	46	10	50
IDL	16± 5.4	26±0.6	30	31	23	40	20	34	13	28	11	26	14	28
LDL	24± 1.8	12±2.0	32	11	41	6	25	7	24	7	40	9	24	7
HDL	59± 3.9	17±1.8	30	13	26	14	47	18	53	20	45	19	52	15
TOTAL(mg/dl)	126±15	141±7	126	142	91	174	91	165	119	131	80	203	144	95
	P	PR	P	PR	P	PR	P	PR	P	PR	P	PR	P	PR
VLDL	6± 1.1	1±0.4	4	2	6	5	4	3	4	3	5	1	9	2
IDL	4± 0.2	5±1.9	3	26	5	16	4	8	4	6	3	4	4	9
LDL	27± 2.8	18±1.0	20	27	23	14	29	14	22	11	25	31	51	12
HDL	63± 2.8	76±2.4	73	45	66	65	63	75	70	80	67	64	36	77
TOTAL(mg/dl)	249±22	231±5.1	306	225	143	81	241	134	200	155	214	132	154	220

Overall, the lipoprotein profiles of these marsupials are similar although further analysis on other samples is needed to confirm this.

FLORENCE, J.J., ROBERTS, D.C.K. and HINDS, L.A. (1982). Proc. Nut. Soc. Aust. 7:190.