XXVIII. THE DEPOT FAT OF *VARANUS SALVATOR* (LAUR.)

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A PORTION of the abdominal fat of a very young kabaragoya, or Ceylon lizard (*Varanus salvator* Laur.), placed at our disposal by Dr R. Child, has been examined, and its component acids have been found to be intermediate in character between those of land and marine animals, thus supporting recent observations on amphibians and reptiles by Klenk [1933; Klenk *et al.* 1935] and Hilditch & Lovern [1936]. *Varanus salvator* Laur. is a large lizard found in marshy localities in many parts of south-eastern Asia; it enters water readily and it is carnivorous, feeding on fish, snakes, birds, eggs, carrion etc.

The fat was almost completely liquid at 20°, was golden yellow in colour and had the following characteristics: sap. equiv. 283.9, iodine value 70.8, unsaponifiable matter 1.6 %, acid value 4.5. Rae [1922] found values as follows for an older specimen of kabaragoya from Ceylon (under the name of *Hydrosaurus salvator* Laur.): sap. equiv. 285.7, iodine value 63.4, unsaponifiable matter 0.8 %, acid value 2.2.

The total fatty acids (54.6 g.) from the hydrolysed fat were submitted to the usual lead salt-alcohol separation, and the "solid" and "liquid" acids obtained were separately converted into methyl esters and fractionally distilled in a vacuum, with the results shown in Table I.

Table I. *Fractional distillation of methyl esters*

(i) Of "solid" acids				(ii) Of "liquid" acids			
No.	g.	Sap. eq.	I.V.	No.	g.	Sap. eq.	I.V.
S 1	1.62	262.6	0.3	L 1	9.45	264.5*	63.2
S 2	2.71	267.3	0.5	L 2	3.10	288.2	94.8
S 3	3.74	272.3	0.8	L 3	2.86	290.2	100.9
S 4	4.26	276.3	1.1	L 4	2.95	292.0	106.9
S 5	4.03	281.2	1.7	L 5	3.81	293.7	112.9
S 6	3.53	292.3	9.9	L 6	3.42	296.4	120.9
	19.89			L 7	3.82	300.7	137.5
				L 8	4.63	308.8†	153.4
					34.04		

* Saturated esters in L 1, sap. eq. 255.4.

† Esters of L 8, freed from unsaponifiable, sap. eq. 300.7, I.V. 150.7.

The data in Table I led to the figures for the component acids given in Table II.

Table II. *Component fatty acids of abdominal fat of Varanus salvator Laur.*

	"Solid" acids (36.1 %)	"Liquid" acids (63.9 %)	Total component acids		
			% (wt.)	% (mol.)	Mean un- saturation
Myristic	1.2	3.0	4.2	5.0	—
Palmitic	24.0	5.3	29.3	30.7	—
Stearic	9.8	—	9.8	9.3	—
C ₁₆ unsaturated	—	12.3	12.3	13.0	(-2.0 H)
C ₁₈ unsaturated	1.1	38.5	39.6	37.8	(-2.7 H)
C ₂₀ unsaturated	—	4.8	4.8	4.2	(-5.5 H)

Klenk *et al.* [1935] have recorded the component acids of the peritoneal fat (i.v. 75–77) of a mature lizard of unknown origin (possibly *Varanus salvator* Laur.) which died in captivity in the Leipzig zoological gardens; the results of this analysis are compared with our present figures in Table III.

Table III

	Klenk <i>et al.</i>	Hilditch & Paul
Myristic	4	4
Palmitic	18	29
Stearic	7	10
C ₁₆ unsaturated	10 (–2.0 H)	12 (–2.0 H)
C ₁₈ unsaturated	56 (–2.4 H)	40 (–2.7 H)
C ₂₀ unsaturated	5 (–5.5 H)	5 (–5.5 H)

Our present data fully confirm the characteristics of the lizard fatty acids as intermediate between those of land and aquatic animals; the presence of 12 % of palmitoleic acid and of small amounts (5 %) of C₂₀ unsaturated acids is reminiscent of the “aquatic” type of fat, whilst the high content (43 %) of saturated acids (chiefly palmitic and stearic) is equally similar to that in the fats of land animals. There is also a general resemblance between these figures and those of Klenk *et al.*; the mean unsaturation of the unsaturated acids is almost the same in each case. The component acids of the fat from the present specimen, however, contained 14 % more saturated acids than were observed by the latter, this increase being wholly compensated for by diminution in the C₁₈ unsaturated acids as compared with the previous study. It is not very profitable to speculate on the cause of this difference (which is quite possibly connected with the diet of the animals) in the absence of definite information as to the food taken in each case. The palmitic acid content in our analysis approaches the value of 30 % which we have previously found to be the characteristic and approximately constant proportion of this acid in the fats of land animals, whereas the lower proportion of palmitic acid observed in the fat of the lizard kept in captivity resembles rather than in fish oils. It may be significant that, whilst the proportions of palmitic, stearic and C₁₈ unsaturated acids are thus different, those of the C₁₆ and C₂₀ unsaturated acids persist almost unchanged (and at the same state of mean unsaturation) in both specimens.

Occasion may be taken to point out that, as a result of recent studies by a large number of investigators, detailed analyses of component acids are now abundant in the cases of seed and pericarp fats in the vegetable kingdom and of fish and other aquatic animal fats, while data for an equally comprehensive range of land animal species are lacking. It is clearly desirable that depot fats from as wide a variety as possible of land animal species should also be submitted, as opportunity permits, to quantitative examination as regards their fatty acids.

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