The present procedure does not resolve carnosine and anserine, but very probably both became labelled, as occurred with *in vivo* experiments. In any case, there is little doubt that an objective measure of dipeptide synthesis is obtained. With other solvent systems (such as 2:1 pyridine-H_2O), radioactivity invariably appears in the carnosine-anserine region. Also β-alanine-^{14}C can be recovered from acid hydrolysates of chromatographically-isolated peptide fractions.

In conclusion, the data in this note support the view that carnosine and anserine are formed in skeletal muscle, and not in liver. The described muscle strip technique permits better-defined conditions than were hitherto possible, and represents a step towards studies with isolated enzyme preparations.

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Received December 14th, 1956

Polyene fatty acids in guinea pig tissues

The amounts of dienoic, trienoic, and tetraenoic fatty acids in the tissues of several different animals bear certain similarities. In the rat[1], dog[2], and chick[3,4] the fatty acids in the serum appear to reflect the composition of the liver and also of the heart. Generally, in the normal animal ingesting a diet containing several percent of vegetable oil, the fatty acids of the serum contain about 15–20% of dienoic acid, 0–10% of trienoic acid, and 10–30% of tetraenoic acid. It is of considerable interest that the polyene fatty acid content of guinea pig serum, and also of certain other tissues, is remarkably different from that of other animals.

Guinea pigs 2–4 days old were fed *ad libitum* a purified diet with or without 7.3% corn oil[5]. A few animals were fed 1.3% methyl linoleate, as the urea complex, in place of the corn oil. Symptoms of essential fatty acid deficiency, which appeared in 6–8 weeks in the animals fed the fat-free diet, have been described previously[5]. Guinea pigs fed stock pellets containing 5% total fat were on the diet from weaning. All animals were 24–32 weeks old when killed. The polyunsaturated fatty acids in the tissues were determined by the alkali conjugation method of WIESE AND HANSEN[6]. No corrections for pentaene (347.5 mμ) and hexaene (375 mμ) absorption were made; the absorptions at these wavelengths were usually negligible compared to those for di-, tri-, and tetraene.

The data in Table I show that in animals on a natural stock diet dienoic acid comprised about one-third of the total fatty acids of the serum. On a purified diet containing corn oil, this fraction increased to 48% and was the only polyene fatty acid present to any extent. This high dienoic content was a reflection of the relatively large amounts in the liver, kidney and heart and abdominal muscle. In the rat[1], dog[2], and chick[4], the dienoic acid in these tissues is of the order of 7–15% of the total fatty acids.

The distribution of tetraenoic acid in the guinea pigs fed the stock or purified diet varies considerably. Whereas the contents of the heart and kidney were quite high (12–20%), approaching the percentage of dienoic, the amounts in the liver and abdominal muscle were very low (3–4%). In this respect the serum (0–2%) resembled the liver. In the other species mentioned above the serum fatty acids generally contain 8–30% of tetraenoic acid.

In contrast to the serum, the red blood cell fatty acids contained a high percentage of tetraenoic acid. Recently, EVANS *et al.*[7] reported that human red blood cells contained about twice as much tetraenoic as dienoic acid.

The changes in the fatty acids of the fat-deficient guinea pigs are of interest in several respects. Although the dienoic acid decreased in all tissues, as would be expected, the tetraenoic acid remained the same or decreased only slightly in the heart, liver and kidney. In the rat, dog, and chick, tetraenoic acid in these tissues falls markedly in fat-deficiency. Another contrasting result was the relatively small amount of trienoic acid which appeared in the deficient guinea pigs. The heart muscle showed the greatest increase. The origin of this trienoic acid is of interest since there was no decrease in tetraenoic acid. It has been shown that in rats this acid is probably formed from tetraenoic acid[8].

TABLE I

POLYUNSATURATED FATTY ACIDS IN GUINEA PIG TISSUES

(Expressed as per cent of total fatty acids, with standard errors)

Tissue	*Diet*	*No. of animals*	*Dienoic acid*	*Trienoic acid*	*Tetraenoic acid*
Serum	Stock	4	35.1 ± 3.4	7.8 ± 0.9	1.9 ± 0.4
	Purified*	11	48.4 ± 2.6	0.0	0.14 ± 0.03
	Fat-free + linoleic**	1	7.3	0.0	0.0
	Fat-free	7	3.0 ± 0.8	0.09 ± 0.02	0.10 ± 0.02
Red cells	Stock	2	17.8 ± 3.8	5.8 ± 0.4	24.2 ± 2.3
	Purified*	2	23.2 ± 7.0	0.0	27.3 ± 10.8
	Fat-free + linoleic**	2	10.0 ± 0.5	3.3 ± 1.3	25.3 ± 2.2
	Fat-free	2	3.7 ± 0.2	5.7 ± 1.3	8.6 ± 0.4
Heart muscle	Stock	4	28.1 ± 1.2	3.6 ± 0.3	17.6 ± 0.9
	Purified*	5	33.2 ± 2.8	0.0	20.8 ± 1.7
	Fat-free + linoleic**	2	17.7 ± 0.5	0.0	25.3 ± 0.2
	Fat-free	5	11.2 ± 1.4	7.0 ± 1.1	21.7 ± 1.1
Abdominal muscle	Purified*	2	33.9 ± 2.5	0.0	3.4 ± 0.5
	Fat-free	5	5.7 ± 1.5	3.6 ± 0.6	7.9 ± 2.2
Liver	Stock	4	31.9 ± 4.0	11.2 ± 2.0	4.4 ± 0.7
	Purified*	4	42.9 ± 2.1	0.0	4.1 ± 0.4
	Fat-free	4	7.5 ± 1.3	2.8 ± 1.2	5.0 ± 0.9
Kidney	Purified*	2	21.7 ± 3.7	0.0	11.7 ± 0.6
	Fat-free	2	6.3 ± 0.6	3.0 ± 0.6	11.2 ± 1.2

* Containing 7.3% corn oil.
** Containing 1.3% methyl linoleate as the urea complex.

The appearance of large amounts of tetraenoic acid in the red cells and heart muscle of guinea pigs fed methyl linoleate as the only lipid indicates that this fatty acid is the precursor of arachidonic acid.

Very little information exists in the literature on the fatty acids in guinea pig tissues. BALDWIN AND LONGENECKER[9] reported on the total carcass fatty acids in normal and scorbutic animals. CHEVALLIER *et al.*[10] analyzed the visceral and subcutaneous fat of guinea pigs fed only barley grass and found negligible amounts of tetraenoic acid, but appreciable trienoic acid. Although the fat composition of the body reflects to a certain degree the composition of the dietary fat[11], it is not likely that the considerable differences noted in the distribution of fatty acids in the guinea pig compared with those in other animals are due primarily to diet.

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Received December 5th, 1956