optimum acetyl-CoA and malonyl-CoA concentrations both enzymes synthesized predominantly free palmitic acid as well as small proportions of C_{6:0}-C_{14:0} fatty acids. A significant proportion (10-15%) of butyric acid was also formed. Lowering the concentration of malonyl-CoA relative to acetyl-CoA decreased the rate of fatty acid synthesis and the proportion of palmitic acid formed. The proportion of medium-chain fatty acids synthesized increased slightly, whereas that of butyrate increased to about 50%. Hence the chain length of the fatty acids formed by these fatty acid synthetases can be controlled by the relative concentrations of acetyl-CoA and malonyl-CoA available. The enzyme from rabbit mammary gland does not possess a specific mechanism for the synthesis of medium-chain fatty acids. Alternative mechanisms of control of chain length, such as the interaction of fatty acid synthetase with other enzymes of lipogenesis, will be discussed.

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The Polyenoic Acids and their Elongation Products in the Muscle Tissue of *Phacochoerus aethiopicus*: a Re-evaluation of 'Animal Fat'

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We have reported that the muscle tissue lipids from bovids free to select their own food were rich in polyenoic acids (30% of the total) when compared with those of domestic bovids, which may contain only 1-8% of the total (Crawford, 1968; Crawford, Gale & Woodford, 1969). The bovids are ruminants and we have now studied the muscle tissue from a non-ruminant, the wart-hog (*Phacochoerus aethiopicus*); we find an even higher proportion of polyenoic acids. Linoleate and linolenate alone account for 30-40% of the total, and the higher elongation products (eicosatetraenoate, eicosapentaenoate, docosapentaenoate and docosaheptaenoate) constitute another 10-15%. The C₁₈ saturated and monounsaturated acids, which characterize the fat

of domestic animals, are present in the proportion of only approx. 7-9% each.

Previously it has been considered that animal fats are predominantly of a saturated and monounsaturated nature (Hilditch & Williams, 1964; Hubbard & Pocklington, 1968; Crawford, 1968). The facts from free-living herbivores, both ruminants and non-ruminants, show that, on the contrary, animal 'tissue fats' contain appreciable amounts of polyunsaturated acids.

The higher polyenoic metabolic products such as eicosatetraenoate, eicosapentaenoate, docosapentaenoate and docosaheptaenoate are also present in tissues of domestic animals, but have been largely overlooked as the massive infiltration of saturated and monounsaturated fat makes them difficult to detect.

The higher elongation products are used for construction of phospholipids, prostaglandins and cerebral gangliosides. Their consistent presence in animal products along with the parent C₁₈ polyenoic acids indicates that a re-evaluation of the 'saturated' nature of 'animal fat' is needed. We have now examined 14 different species and the saturated and monounsaturated predominate only in animals living under domestic conditions.

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Brain and Cerebellum Fatty Acid Pattern Changes in the Encephalomalacic Chick and the Presence of a Homeostatic Mechanism

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Several workers have reported changes in the fatty acid composition of various tissues in vitamin E deficiency (e.g. Bieri & Andrews, 1964; Witting & Horwitt, 1967; Lee & Barnes, 1969). Witting (1967), working with rat muscle tissue, postulated a homeostatic mechanism whereby the synthesis of certain polyunsaturated fatty acids is stimulated to make up for deficiencies in others. The tissues of the encephalomalacic chick were studied to discover if this homeostatic effect was observable in another tissue in which gross changes occur in vitamin E deficiency.

The total phospholipid from whole brain of encephalomalacic chicks showed significant rises in the relative percentages (expressed as means