I am indebted to Dr. J. W. Cornforth, London, for advice and suggestions throughout the work.

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June 9.

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Occurrence of *n*-Nonadecanoic Acid in Ox Perinephric Fat

When *n*-heptadecanoic (margaric) and *n*-pentadecanoic acids[1] were isolated from hydrogenated mutton fat, it was anticipated that all the normal odd-numbered fatty acids appropriate to the series would be present in natural fats. Subsequent evidence points to this being the case. Apart from the occurrence of *n*-C_{15} and *n*-C_{13} acids in unhydrogenated butterfat, and of *n*-C_{15} and *n*-C_{17} acids in unhydrogenated fish-liver oil, *n*-C_{11} acid has been located in hydrogenated butterfat, and all the acids (odd and even) from C_2 to C_{10} have been shown to be present in the volatile acids of ox perinephric fat.

We now report the isolation from hydrogenated ox perinephric fat (sample *J*/21) of trace quantities of the C_{19} member, *n*-nonadecanoic acid. The chemical and physical properties of the fraction isolated (denoted *U74S3S*, weight 0·20 gm.) were as follows: saponification equivalent 297·5 (calculated for $C_{19}H_{38}O_2$, 298·5); melting point 67·5–68·0° (literature records are 68·65° [2] and 68·5° [3] for *n*-nonadecanoic acid); X-ray long spacing 43·77 A. (± 0·5 A.) for sample prepared from benzene (literature records[4] 44·13 A. for sample prepared from acetone). Were this fraction 17-methyloctadecanoic acid, its melting point would be less than 1 deg. below that of the normal isomer (literature records[5] 67·3–67·8°), but its X-ray long spacing[6] would be of the order of 36·2 A.

Although *n*-nonadecanoic acid has been prepared synthetically it has not hitherto been isolated from a natural or a hydrogenated fat.

Further details of this work will be published later.

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May 27.

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Volatile Fatty Acids in Phospholipids

Using the micro-technique of James and Martin[1], it has been established that bovine muscle phospholipids contain small amounts of volatile fatty acids, and it is possible that this finding can be extended to animal phospholipids in general. Hitherto, in the absence of techniques for the micro-estimation of the low molecular-weight fatty acids, it has generally been accepted that the fatty acids of phospholipids tend to be of high molecular weight only. A consecutive series of normal fatty acids from C_2 to C_{10} has been identified in ox perinephric fat[2].

To minimize post-mortem enzymatic hydrolysis of the lipids, the bovine muscle, which had been freed from visible fat, was finely minced and heated in boiling ethanol within an hour of slaughter. The ethanol-ether extracts of the dried tissue, from which non-lipid impurities had been removed on cellulose[3], were separated into phospholipids and glycerides. A preliminary separation was carried out making use of their differing solubilities in acetone, and from the impure phospholipid thus obtained (phosphorus content, 3·7 per cent) further glyceride was separated by using silica gel previously activated for 24 hr. at 120° C. Glycerides were eluted with chloroform[4], while under the same conditions phospholipids were adsorbed on to the silica gel. The phospholipids (phosphorus content, 3·9 per cent) were then eluted with methanol. Purified solvents were used in the extraction and separation procedures. It was found that the muscle contained 2·71 per cent glycerides and 0·57 per cent phospholipids.

The phospholipids were hydrolysed by refluxing with 1 per cent sulphuric acid in ethanol for 3 hr., and then with approximately 13 per cent potassium hydroxide in ethanol for 5 hr. After removal of the unsaponified material by ether extraction (6·9 per cent by weight) the fatty acids were steam-distilled. The soaps of the acids volatile in steam were concentrated to an approximately normal solution and an aliquot was acidified and applied to the gas-liquid chromatogram by the procedure suggested by James and Martin[1]. The column was operated at 137° C.

The acids identified were acetic, octanoic, propionic, hexanoic, butyric, *iso*-valeric and valeric in decreasing amounts on a molar basis. These volatile acids represented approximately 0·17 per cent by weight of the total fatty acids present in the muscle phospholipids.

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May 27.

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Protection of Deoxyribonuclease from Ionizing Radiation by Adsorbents

The present communication presents experimental evidence which indicates that adsorption of deoxyribonuclease on a liquid–solid interface affords protection of enzymatic activity from radiation damage. Other means of protecting enzymes in aqueous solutions have been described by various investigators[1–6], but, to our knowledge, no information is available concerning the protective effect of adsorption.