The Fatty Acid Content of Meat and Poultry Before and After Cooking[1]

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THE essential quality of polyunsaturated fatty acids in animal nutrition has been demonstrated conclusively on rats by the experiment of Burr and Burr (4). Many later investigations showed their importance in the nutrition of other animals (9, 34). Although more work needs to be done concerning their role in human nutrition, the evidence indicates that unsaturated fatty acids are at least related to the integrity of human skin (10, 11). For this reason the National Research Council (28) has recommended the inclusion of these essential unsaturated fatty acids, to the extent of at least 1% of the total calories, as daily allowances.

However the essential fatty acid content of foods has not been extensively investigated. Due to the complicated composition of fats contained in foods and the small percentage of these essential fatty acids in the total fat, assays of this kind have been tedious and time-consuming. Hilditch and his group worked on the body fat of pig (19, 20), ox (17, 18), sheep (21), and chicken (22); Andrews and Richardson on lard (1); Grossfeld on chicken (6); and Nutter, Lockhart, and Harris on chicken and turkey (26). Most of these investigations were done on animal depot fat or fat rendered from fatty tissues rather than on meat cuts.

With the introduction of the spectrophotometric method for the assay of unsaturated fatty acids (3) it is now possible to assay food fats with much greater speed and reasonable accuracy. In order to supply the required information on the essential fatty acid content of common foods for dietary studies, it is one of the purposes of the present work to analyze various kinds of meats.

Essential fatty acids are highly unsaturated compounds, susceptible to oxidation especially at elevated temperatures. Since most meats have to be cooked before eaten, the amount of destruction of these essential fatty acids during cooking is of importance from a nutritional point of view. Therefore the second purpose of this investigation is to study the effect of various cooking conditions on the fatty acid composition of meats.

Preparation of Samples

Samples of pork (fresh and cured), lamb, and beef, from animals of known dietary regime, were obtained from the Department of Animal Husbandry at Cornell University. Frozen meats were cuts of the same origin and were frozen for 6 to 8 months at —10°F. Poultry was obtained from a local market.

For comparison before and after cooking, paired cuts were used in the case of pork and beef roasts, lamb legs, and chops. For ham, adjacent slices from the same large ham, and for bacon, alternate slices from the same side were used for raw and cooked samples. Ground or cubed meat was thoroughly mixed and divided into two parts. Poultry carcasses were cut longitudinally in order to obtain paired cuts. The neck was included only for the stewed chicken and was divided approximately in half. Giblets were not included in the study. In the case of fried and stewed chicken the halves were further divided into the usual individual cuts. In order to obtain sufficient meat for analysis from the frying chickens, ground meat from corresponding sides of two fryers were pooled for raw and cooked analyses respectively.

One of the paired samples was weighed, the meat removed from the bone, ground, well mixed, and used for the analysis of uncooked meat. The other sample was cooked, following the procedures suggested in "Meat and Meat Cookery" (24) by the National Livestock and Meat Board. The cooked meat was cooled, weighed, deboned, ground, mixed, and used for the analysis of cooked meat.

Total drippings were calculated by substracting the weight of the pan from pan plus drippings. The drippings were then poured into a beaker. The pan was washed three times with hot water to remove the drippings adhering to the sides or bottom. Washings were combined with original drippings and set into the refrigerator over night. The solid cake of fat was lifted off, washed with cold water to remove adhering materials, and weighed. It was used for the analysis of dripping fat.

Samples, if not analyzed immediately, were packed in 200-gm. portions, in waxed freezing containers, stored at —10°F. and analyzed within two weeks.

Methods of Analysis

Moisture. Duplicate samples (about 5 gm.) of ground meat, accurately weighed, were mixed with a known quantity of purified asbestos in an aluminum weighing dish. They were dried at 100°C. in an air oven for 20-28 hours to constant weight. Loss in weight was calculated as percentage of moisture.

Fat Content. Dried material from the moisture determination was removed quantitatively from the weighing dish into a weighed thimble. Ethyl ether was used to wash down any particles sticking to the bottom of the weighing dish. The thimble was placed in a Soxhlet extracting apparatus and extracted with ethyl ether for eight hours. The thimble with its contents was dried and weighed to obtain the weight of non-fat solids in the sample. Weight of fat was obtained by difference.

Extraction of Fat from Meat Samples for Further Analysis. One hundred grams of meat and 200 gm. of anhydrous sodium sulphate were mixed in a beaker and allowed to stand for half an hour. The mixture was transferred to a Waring blendor, 200 ml. carbon tetrachloride was added, and the whole was blended for one and one-half minutes. A clear extract was obtained on filtering through a retentive paper.

Peroxide Value. This was determined directly on the fat extract, using a slight modification of the Wheeler method (33). The values were expressed as

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milli-equivalents of peroxide oxygen per 1,000 gm. of fat.

Iodine Number (Wijs). It was also determined directly on the extract and expressed as grams of iodine absorbed per 100 gm. of fat. Since unsaponifiable matter present in animal fats does not usually exceed 1%, no attempt was made to correct for this.

Determination of Fatty Acids. To avoid interference of the unsaponifiable material on fatty acid analysis, samples of extracted fat, after removal of solvent, were saponified, the unsaponifiable material extracted, and the fatty acids recovered according to the following procedure recommended by Lundberg (23). For 2 gm. of fat, 0.8 gm. KOH, 0.52 ml. water, and 4.0 ml. of 95% alcohol were used. The KOH was first dissolved in the water, and then the alcohol was added. The resulting solution was added to the fat and the mixture was heated to boiling and boiled for five minutes. The mixture was then diluted with an equal volume of water and cooled.

The resulting soap solution was extracted three or more times with equal volumes of a 1:1 mixture of petroleum ether-ethyl ether to remove unsaponifiables. The free fatty acids were then liberated by the addition of a 10% excess of 4N HCl and a 1:1 mixture of petroleum ether-ethyl ether was again added. The non-aqueous phase was washed with water until it was neutral to litmus, and the solvent was then removed under nitrogen.

The spectrophotometric procedure of Brice *et al.*, including background corrections (3), was followed for the determination of linoleic, linolenic, arachidonic, and conjugated diene acids. Observations were also made in the pentaene and hexaene regions (35). Determination of oleic acid was based on iodine number and was calculated according to the formula given in Stillman's report of the Spectroscopy Committee (29). Saturated fatty acids were obtained by difference. Duplicate samples were determined for moisture, fat content, iodine value, and percentages of various fatty acids. Data presented are average values.

Results and Discussion

Peroxide Values. These values of the fat of fresh, cured, and frozen meats are shown in Table I. No more than a trace of peroxides were found in any of the fresh meats. Peroxides developed during roasting of large cuts in all cases. As might be expected, the values were higher in the drippings than in the meat itself. Pork drippings had a detectable rancid odor.

Considerable peroxidation of all pork products occurred also during the six- to eight-month period of freezing storage. Peroxide values ranged from 32 to 105. However these values did not increase further when the frozen products were cooked. Instead they decreased, especially in the drippings, indicating that the rate of decomposition of peroxides at high temperatures exceeded the rate of formation.

Fatty Acid Distribution in the Fat of Fresh, Cured, and Frozen Meats. (Table I.) The fatty acid distribution in the fat from raw meat from several species varies greatly. The linoleic acid content varied from 1-2% in the case of beef and lamb fat to 20-30% in the case of turkey and chicken fat. Pork fat is much higher in linoleic acid content than lamb and beef fat but not as high as the fat from poultry.

Variations in the amount of linolenic and arachidonic acids in fats from different species are not as marked as linoleic, but the poultry fats are generally higher in these polyunsaturated fatty acids than the animal fats. In addition, all of the poultry fats showed small absorption peaks at 3,475 Å and 3,750 Å in the region of pentaene and hexaene conjugation, respectively, after alkali isomerization. These peaks were particularly marked with turkey fat. No such maxima were observed with beef, lamb, or pork fat. No quantitative estimation could be made of the amount of these polyunsaturated fatty acids present in poultry since purified standards were not available. It is probable that these five or six double bond fatty acids also contributed to the observed absorption in the diene, triene, and tetraene regions, thus introducing small errors into the reported values for linoleic, linlenic, and arachidonic acids.

The data also show significant differences in fatty acid distribution of fat extracted from various regions of the same animal.

Fatty acid composition of animal fats varies with the fatty acid composition of their ration (2, 30) as well as with different regions of the same animal. Thus it is hard to compare the values on particular meat cuts reported here with those available in literature for depot fat or rendered fat from combined fatty tissues of the entire animal. However our data are within the range of the literature values.

The present study does not furnish data on paired cuts from the same animal before and after curing so that it is not possible to say whether the curing process had any effect on the fatty acid distribution. Since the peroxide value of the cured pork was zero or trace, it is unlikely that any loss of unsaturated fat occurred.

In spite of the increase in peroxide values during freezing of raw and cured pork, the values for the polyunsaturated fatty acids were not substantially changed as assayed by the spectrophotometric method. With ham and bacon the iodine numbers were significantly lower after freezing, resulting in a slight decrease in the calculated value for oleic acid. The significance of these figures will be discussed in the next section in connection with cooking losses.

Effect of Cooking on the Fatty Acid Composition of Fat in Meats. The differences in fatty acid content of fat from the raw meat as compared to that of cooked meat and drippings (Table I) are probably to be attributed largely to a non-uniform distribution of the triglycerides of the raw meat rather than to large differences in the extent of destruction of unsaturated fatty acids during cooking. In order to compute the cooking losses of each fatty acid, these acids in cooked meat and drippings were summed together and then compared with those in the fat of raw meat. For purpose of calculation it was assumed that the total weight of raw fat was equal to that obtained from cooked meat and drippings. Results are given in Table II.

Losses in fatty acids would presumably occur only by oxidation of the unsaturated fatty acid and would result in a concomitant increase in the calculated values for saturated fatty acids since the latter are obtained by difference rather than by direct analysis. Oleic acid also is obtained by a calculation involving the iodine value and the experimentally determined

TABLE I

Fatty Acid Distribution in the Fat of Raw and Cooked Meats

Sample Analyzed	Peroxide Value	Iodine Number (Wijs)	Fatty Acids—% in Total Triglycerides					
			Conj. Diene	Saturated	Oleic	Linoleic	Linolenic	Arachidonic
Pork loin								
Raw	0.0	59.7	0.19	38.6	48.4	7.50	0.66	0.23
Roasted	11.4	53.0	0.22	45.8	41.7	7.18	0.57	0.21
Dripping	36.6	60.1	0.31	39.1	47.4	7.90	0.69	0.18
Pork ground								
Raw	0.0	61.8	0.22	36.7	50.0	7.77	0.55	0.24
Pan broiled	0.0	61.4	0.24	37.2	49.7	7.73	0.54	0.22
Dripping	8.2	61.0	0.15	37.8	48.9	7.81	0.56	0.22
Frozen pork ground								
Raw	41.5	62.3	0.24	35.9	51.4	7.31	0.61	0.23
Pan broiled	37.4	62.4	0.24	36.6	51.5	7.26	0.61	0.24
Dripping	4.1	62.4	0.16	36.5	51.0	7.96	0.70	0.23
Bacon								
Raw	Trace	67.4	0.21	33.0	52.0	9.79	0.56	0.35
Pan broiled	Trace	65.4	0.23	35.1	50.4	9.08	0.51	0.36
Dripping	Trace	67.7	0.18	33.0	51.1	10.20	0.67	0.36
Frozen bacon								
Raw	31.6	65.9	0.27	34.5	50.3	9.50	0.63	0.33
Pan broiled	27.1	65.0	0.30	34.9	50.4	9.05	0.63	0.32
Dripping	16.3	66.7	0.21	34.2	50.1	10.19	0.67	0.31
Ham								
Raw	Trace	64.2	0.21	33.8	53.6	7.25	0.48	0.37
Pan broiled	Trace	64.0	0.21	34.4	52.6	7.57	0.48	0.39
Dripping	Trace	62.4	0.19	37.3	48.9	8.43	0.66	0.32
Frozen ham								
Raw	104.8	62.0	0.42	36.2	51.0	7.22	0.46	0.31
Pan broiled	99.9	61.3	0.50	36.7	50.9	6.81	0.42	0.34
Dripping	18.1	62.3	0.26	36.5	49.9	8.21	0.61	0.23
Rolled beef roast								
Raw	Trace	53.0	0.82	40.4	52.5	1.27	0.53	0.21
Roasted	7.0	52.5	0.77	41.0	51.9	1.26	0.53	0.21
Dripping	21.6	52.7	0.79	40.8	52.2	1.25	0.47	0.16
Beef chuck								
Raw	Trace	50.6	0.59	42.9	49.5	1.86	0.44	0.31
Stewed	Trace	50.1	0.58	43.2	49.5	1.68	0.40	0.26
Cooking liquid	Trace	49.4	0.58	43.8	49.1	1.50	0.48	0.14
Lamb leg								
Raw	0.0	42.6	0.50	52.9	39.3	1.62	0.85	0.37
Roasted	9.0	40.5	0.56	56.1	35.8	1.90	0.91	0.43
Dripping	21.4	40.8	0.44	54.3	38.4	1.42	0.71	0.28
Lamb chop								
Raw	0.0	39.2	0.36	55.7	37.3	1.28	0.69	0.29
Pan broiled	0.0	38.4	0.38	56.9	36.1	1.31	0.68	0.32
Dripping	0.0	38.6	0.39	56.7	36.2	1.30	0.74	0.29
Frying chicken								
Raw	0.0	92.5	0.15	32.2	28.8	31.4	1.53	1.53
Fried	6.2	118.1	0.18	20.7	26.3	43.2	4.04	1.46
Frying oil (Soybean oil)								
Before	0.0	132.9	0.16	15.5	20.1	53.2	6.76	0.06
After	9.0	132.3	0.16	13.6	24.0	51.8	6.04	0.12
Stewing chicken								
Raw	0.0	90.6	0.14	23.4	46.1	24.7	0.82	0.60
Stewed	11.2	90.4	0.18	24.9	43.1	25.7	0.78	0.78
Cooking liquid	10.7	90.6	0.13	23.6	45.5	25.0	0.83	0.52
Roast chicken								
Raw	Trace	78.5	0.28	30.3	45.2	18.1	0.98	0.58
Roasted	24.4	79.6	0.35	30.3	45.1	18.4	1.06	0.65
Dripping	41.1	72.3	0.40	34.0	43.5	16.7	0.75	0.36
Turkey								
Raw white meat	0.0	84.5	0.29	28.8	43.5	20.8	0.70	1.59
Raw dark meat	0.0	83.8	0.30	28.0	45.5	19.7	0.80	1.30
Raw skin	0.0	84.2	0.34	26.7	47.2	19.4	0.86	1.09
Roasted white meat	0.0	83.9	0.44	27.6	46.2	19.3	0.56	1.53
Roasted dark meat	16.5	83.3	0.41	25.8	50.3	16.8	0.56	1.68
Roasted skin	10.5	83.2	0.41	26.9	47.5	18.8	0.87	1.02
Dripping	9.2	84.4	0.30	27.8	45.0	20.6	0.85	1.19
Prem (canned ham)	4.7	61.4	0.21	38.3	47.8	8.40	0.59	0.37

values for linoleic, linolenic, and arachidonic acids. Considering the normal experimental error in each of these values, it is probable that losses of less than 2% in oleic acid are not significant.

In all samples, with the exception of roast chicken, there was loss of total unsaturated fat. The loss exceeded 2% only in the case of roasted pork loin and leg of lamb, both of which showed considerable peroxidation during cooking. It is probable that there was a significant loss of unsaturated fatty acids in these samples. It would appear from the data that losses in oleic acid were mainly responsible for the overall loss. Linolenic and arachidonic acids were usually present to only a fraction of a percentage in the original fats (Table I); changes in these acids after cooking were within the experimental error of the method.

The rates of oxidation of methyl oleate, linoleate, and linolenate at 20-30°C. were reported in the ratio of 1:12:25 respectively by Gunstone and Hilditch (7). Similar results were found with pure acids (16). However when these acids were present together, as in the case of natural fat, the rate of oxidation of oleate can be greatly accelerated by the presence of linoleate or linolenate (7). Furthermore when the pure fatty acids are present in a polyphasic system, the ratio of their oxidation rates are much closer together than in the studies reported above (32). Therefore it might be predicted that in mixed tryglycerides in a complex system, such as meat, that an acid of lower unsatura-

TABLE II

Fatty Acid Balance Before and After Cooking or Freezing

Sample Analyzed (including drippings or cooking liquor)	Gain or Loss of Fatty Acids on Cooking Expressed as % of Total Fat				
	Saturated	Oleic	Linoleic	Linolenic	Arachidonic
Pork loin, roasted	+4.5	−4.5	−0.02	−0.05	−0.03
Pork, ground, pan broiled	0.0	0.0	−0.06	+0.01	+0.02
Bacon, pan broiled	+0.4	−1.1	0.00	+0.05	+0.01
Ham, pan broiled	+1.3	−1.8	+0.52	+0.04	+0.03
Beef, rolled rib, roasted	+0.6	−0.6	−0.02	−0.02	−0.01
Beef, chuck, stewed	+0.5	+0.5	−0.20	−0.02	−0.07
Lamb, chop, pan broiled	+1.1	−1.1	0.00	0.00	+0.02
Lamb, leg, roasted	+2.8	−2.7	+0.16	0.00	−0.03
Chicken, stewed	+0.7	−1.5	+0.54	−0.01	+0.01
Chicken, roasted	+1.3	−1.3	−0.25	−0.01	−0.04
Pork, ground, frozen	0.0	0.0	+0.18	+0.03	+0.01
Bacon, frozen	0.0	0.0	+0.33	+0.03	−0.02
Ham, frozen	0.0	−0.8	+0.16	+0.04	−0.02

tion would be oxidized along with the higher unsaturated ones long before the total destruction of the latter.

The possibility of irregularities in the measurement of acids more unsaturated than oleic due to conjugation of oxidized products should also be considered. It has been shown that oxidation of any of the unsaturated fatty acids may lead to introduction of another double bond into the fatty acid chain during alkali isomerization, resulting in an apparent increase in a fatty acid of higher degree of unsaturation (25, 27). According to Swain and Brice (31), this tetraenoic and trienoic conjugation formed from oxidation products of linolenic and linoleic acids during alkali-isomerization can be differentiated from the tetra- and tri-enoic conjugation produced by alkali-isomerization of arachidonic and linolenic acids, respectively, by spectrophotometric examination of the sample after heating in neutral ethylene glycol.

In an attempt to correct for possible spurious conjugation due to oxidation Swain and Brice's method was followed (31). Samples were heated in neutral glycerine instead of KOH-glycerine at 180°C. for 30 minutes. The readings obtained from aliquots of the fatty acid heated in neutral glycerol were substituted for preformed conjugated readings in calculating the percentage of linoleic, linolenic, and arachidonic acids.

TABLE III

Fatty Acid Composition of Foods Before and After Cooking

Sample Analyzed	Edible Portion	Fat % in Edible Portion	Fatty Acid—% in Edible Portion				
	% of Original		Saturated	Oleic	Linoleic	Linolenic	Arachidonic
Pork loin							
Raw	82.5	36.6	14.1	17.7	2.74	0.24	0.08
Roasted	60.6	29.9	13.7	12.5	2.15	0.17	0.06
Dripping	.....	95.5	37.3	45.2	7.55	0.66	0.17
Pork ground							
Raw	100.0	39.8	14.6	19.9	3.09	0.22	0.10
Pan broiled	64.5	44.0	16.4	21.9	3.40	0.25	0.10
Dripping	.....	89.0	33.6	43.5	6.95	0.50	0.20
Bacon							
Raw	100.0	67.2	22.1	34.9	6.57	0.38	0.23
Pan broiled	42.6	57.2	20.1	28.8	5.19	0.29	0.21
Dripping	.....	100.0	33.0	51.1	10.20	0.67	0.36
Ham							
Raw	97.5	20.0	6.8	10.7	1.45	0.09	0.07
Pan broiled	63.5	22.6	7.8	11.9	1.71	0.11	0.09
Dripping	.....	100.0	37.3	48.9	8.43	0.66	0.32
Rolled beef rib roasted							
Raw	100.0	43.8	17.7	23.0	0.55	0.23	0.09
Roasted	76.9	47.8	19.6	24.8	0.60	0.25	0.10
Dripping	.....	84.1	36.2	46.3	1.11	0.42	0.14
Beef chuck							
Raw	100.0	18.0	7.7	8.9	0.33	0.08	0.05
Stewed	66.5	25.0	10.8	12.4	0.42	0.10	0.07
Cooking liquid	.....	14.3	6.3	7.0	0.21	0.07	0.02
Lamb leg							
Raw	80.4	26.4	14.0	10.4	0.43	0.22	0.10
Roasted	66.7	27.7	15.6	9.9	0.53	0.25	0.12
Dripping	.....	70.0	38.0	26.9	1.00	0.50	0.20
Lamb chop							
Raw	84.8	45.9	25.6	17.1	0.59	0.32	0.13
Pan broiled	60.0	51.1	29.1	18.5	0.67	0.35	0.16
Dripping	.....	92.5	52.4	33.5	1.20	0.68	0.27
Frying chicken							
Raw	68.0	6.7	2.2	1.9	2.10	0.10	0.10
Fried	50.2	15.8	3.3	4.2	6.83	0.63	0.23
Stewing chicken							
Raw	85.0	22.5	5.3	10.4	5.55	0.18	0.13
Stewed	47.0	14.6	3.6	6.3	3.75	0.11	0.11
Cooking liquid	.....	27.7	6.5	12.6	6.94	0.23	0.14
Roast chicken							
Raw	77.1	10.0	3.0	4.5	1.80	0.09	0.05
Roasted	49.4	11.3	3.4	5.1	2.07	0.12	0.07
Dripping	.....	72.2	24.5	31.4	12.02	0.54	0.25
Turkey							
Raw half	72.0	.....	.....	.....	.....	.....	.....
White meat	30.0	3.29	1.0	1.4	0.68	0.02	0.05
Dark meat	28.2	7.53	2.1	3.4	1.48	0.06	0.10
Skin	13.8	46.4	12.4	21.9	9.00	0.40	0.50
Roasted half	47.5	.....	.....	.....	.....	.....	.....
White meat	20.8	5.44	1.5	2.5	1.05	0.03	0.08
Dark meat	17.3	12.3	3.2	6.2	2.07	0.07	0.21
Skin	9.4	26.7	7.2	12.7	5.04	0.23	0.27
Dripping	.....	61.8	17.2	27.8	12.7	0.53	0.74
Prem (canned ham)	.....	28.1	10.8	13.4	2.36	0.17	0.10

Results thus obtained are not significantly different from those calculated in the usual way, indicating that these oxidation products are probably not present in significant amounts. However it should be borne in mind that Swain and Brice's observations were made on fatty acids oxidized at low temperature. Similar observations have not been made on fatty acids oxidized at the high temperatures of the drippings in the present study. The course as well as the rate of oxidation is known to be different at high temperatures (7).

Changes in spectrophotometric absorption of fats and pure polyunsaturated fatty acids during oxidation have been followed extensively by Holman *et al.* (12, 13, 14, 15). Increase in absorption at 2,300-2,350 Å and 2,700-2,800 Å were consistently observed with increased oxidation. Since the preformed diene conjugation of the fats as measured at 2,320 Å increased only slightly (Table I) and very little change in absorption was detected at 2,700-2,800 Å in most of the samples analyzed after cooking, it is probable that no considerable change occurred in the polyunsaturated acids.

Destruction of unsaturated fatty acids of fats during oxidation at 110°C. in the presence of air was followed quantitatively by Filer, Mattil, and Longenecker (5). They found that during the induction period of oxidation no detectable changes occurred in the fats. At the time when peroxide formation increased appreciably, linoleic acid decreased, total unsaturation decreased, and the mean length of the carbon chain of the acids decreased. However more than 90% of the original linoleic acid was still retained when the fat had a peroxide value over 100.

Although the values of fatty acid composition in the fat of cooked meats and drippings, as presented in Table I, may include errors from spurious oxidation products, these errors are small as judged by the low peroxide values and the small changes obtained in iodine number, diene conjugation, absorption at 2,700-2,900 Å, and conjugation formation by heating in neutral glycerol of the fat from cooked meats.

Table III gives the composition of the edible meat, before and after cooking. Obviously differences in fatty acid content of the meat depend upon the total fat content as well as upon the distribution of fatty acids in the extracted fat (Table I). Chicken fried in vegetable oil and bacon as eaten are highest, and lamb and beef the lowest in linoleic acid among all meats. However it should be noted here that the high linoleic acid content of fried chicken is partly due to the dilution of chicken fat with vegetable oil during frying. Linolenic acid and arachidonic acid contents of all meats analyzed are small in comparison with linoleic acid; therefore variations in these acids will not affect greatly the nutritive value of various meats as sources of essential fatty acids. The data presented in this table might be used for human dietary studies.

Summary

Fatty acids distribution of various cuts of pork, lamb, beef, turkey, and chicken before and after cooking were analyzed by the spectrophotometric method. Results indicate that only a small amount of the polyunsaturated fatty acids was lost with ordinary methods of cooking. The reliability of these apparent fatty acid values after cooking is discussed. A table of fatty acid composition of these meats as eaten is also presented for dietary purposes.

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