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DIETARY PROTEIN AND COPPER LEVELS AND ITS EFFECT  
ON FAT COMPOSITION OF TURKEYS

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Recent studies at many experiment stations have caused people to become concerned about the type of fat in their diets. Experiments tend to show that highly saturated fats are more cholesterol forming and therefore, a major cause of heart attacks in this country. Previous work at this station has indicated that diet has a great effect on the type of body fat in birds.

In this experiment, the effects of copper, and protein level on fat composition were considered. Carcasses from the growth study reported here (A.S. Series 71-12) were made available for this work.

Drip fat collections after cooking were taken from a selection of twelve birds from each treatment (six broilers and six Large Whites). Two methyl esters were made of each fat sample and these in turn were analyzed twice for fatty acid analysis by Gas-Liquid chromatography. The results obtained are shown in Table 1. No statistical analysis has been made of these results, but copper supplementation does not increase the extent of total fat unsaturation. However, there seemed to be an effect on linoleic acid content. The heavy variety showed an increase whereas the broilers showed a consistent decrease in linoleic acid content with copper supplementation. The low protein diets produced turkeys with a slightly higher linoleic acid content. Diets had no consistent effect on total fat content of muscle tissue.

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TABLE 1. FAT COMPOSITION AS INFLUENCED BY DIET AND TYPE OF TURKEY

	15 Wk. Broiler Turkeys				24 Wk. Large Turkeys			
	Low Protein		High Protein		Low Protein		High Protein	
	Low Protein	and Copper	High Protein	and Copper	Low Protein	and Copper	High Protein	and Copper
<b>FATTY ACIDS</b>								
Myristic, %	1.58	1.20	1.19	1.23	0.94	0.98	0.96	0.99
Palmitic, %	23.16	25.61	23.20	26.74	23.44	23.22	23.38	22.93
Palmitoleic, %	6.99	7.76	7.16	7.07	6.22	5.87	6.76	7.08
Stearic, %	7.56	7.56	7.84	8.28	7.40	7.71	7.06	7.17
Oleic, %	39.95	39.81	39.99	39.21	35.66	34.62	36.73	35.85
Linoleic, %	19.15	16.63	18.99	16.26	24.72	26.05	23.62	24.32
Linolenic, %	1.20	1.05	1.37	1.23	1.60	1.70	1.66	1.69
% SATURATION	32.30	34.37	32.23	36.25	31.78	31.91	31.40	31.09
% UNSATURATION	67.71	65.71	67.77	63.77	68.20	68.24	68.77	68.94
COOKED MUSCLE FAT ON A MOISTURE FREE BASIS, %	9.70	10.16	9.33	12.59	19.15	19.53	19.09	18.17