amount of acetylcholine could be detected in hæmolymph from flies treated with di*iso*propylphosphorofluoridate. However, much of the acetylcholine in the abdomen was found in the contents of the hind-gut. Thus it may be that, in flies treated with di*iso*propylphosphorofluoridate, acetylcholine is in fact redistributed via the hæmolymph, but is removed from it and reconcentrated in the hind-gut, possibly by the action of the Malpighian tubules.

Fuller details of these and of other experiments on flies treated with di*iso*propylphosphorofluoridate will be reported elsewhere.

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Determination of Fat in Mutton Carcasses by Measurement of Specific Gravity

IN albino rats[1], guinea pigs[2], swine[3] and cattle[4] a close relationship has been shown to exist between specific gravity and percentage fat in the eviscerated carcass. Likewise in living man[5] a relationship has been established between specific gravity and percentage fat in the body.

In the present work the relationship between specific gravity of the whole carcass and the percentage fat content of the half carcass and of certain joints has been determined on three groups of five six-year-old Romney pasture-fed ewes reared under typical New Zealand flat-country conditions. The first group of ewes was killed at the outset of the experiment. The second and third groups were killed twenty-eight days later. Animals in the second group were pasture-fed for 1 hr. and starved for 23 hr. per day for the duration of the experiment, while the animals in the third group were grazed on pasture throughout.

After chilling for approximately 18 hr. after slaughter, the specific gravity of the kidney-free carcasses was determined by weighing in air and then in water at a water temperature of 17°–20° C. The surface temperature of carcasses was 11°–12° C.

Following the determination of whole carcass specific gravity the carcasses were stored for a period in a freezing chamber. The frozen carcasses weighing 55·2–78·2 lb. were then divided down the middle of the back with a meat band saw and the right side sliced into pieces one-eighth to one-quarter of an inch in thickness, again using the band saw. These slices, consisting of bone, muscle, fat and other tissues, were then readily minced.

Obtaining a uniform mince of all the soft and hard tissues of the carcass has hitherto presented great difficulty. This has been effectively overcome by the technique just described which, so far as we are aware, has not previously been recorded in the literature. Slight modifications of this technique are also being investigated in this Department in studies of functional anatomy, parturition and whole-animal chemical determinations of meat animals.

The fat content in six samples per animal was determined by using a slight modification of the method of Barnicoat and Shorland[6]. The standard error of the mean of these six samples was ± 0·39 and the coefficient of variation was 2·5 per cent. Percentage fat from the 15 half-carcasses varied from 26·1 to 45·4, and specific gravity of the whole carcasses varied from 1·009 to 1·049.

The left side of each carcass was divided into leg and loin, described by Pálsson[7], as well as a ninth–tenth–eleventh rib cut. The bone, muscle and fat contents were determined by dissection following the method of Pálsson[7].

The linear regression equations of the dependent variables Y, Z, U and W on the independent variable specific gravity together with their standard errors of estimate and their correlation coefficients are as follows:

Where X is $\frac{1}{\text{specific gravity}}$; Y is per cent ether extract fat in half-carcass; Z is per cent dissectable fat of leg plus loin; U is per cent ether extract fat in 9–10–11 rib cut; W is per cent dissectable fat in 9–10–11 rib cut; then

$$Y = 100\left(\frac{5\cdot680}{\text{specific gravity}} - 5\cdot138\right);$$
$$S_{x.y} = 3\cdot196 \text{ per cent}; \quad r_{xy} = 0\cdot877;$$
$$Z = 100\left(\frac{4\cdot965}{\text{specific gravity}} - 4\cdot512\right);$$
$$S_{x.z} = 3\cdot131 \text{ per cent}; \quad r_{xz} = 0\cdot852;$$
$$U = 100\left(\frac{7\cdot386}{\text{specific gravity}} - 6\cdot695\right);$$
$$S_{x.u} = 4\cdot706 \text{ per cent}; \quad r_{xu} = 0\cdot877;$$
$$W = 100\left(\frac{6\cdot479}{\text{specific gravity}} - 5\cdot810\right);$$
$$S_{x.w} = 4\cdot764 \text{ per cent}; \quad r_{xw} = 0\cdot814.$$

These results show that the relationship between specific gravity of the whole carcass and the percentage fat content of the half-carcass and joints is high. Thus the specific gravity method of estimating percentage fat content reported for other species can be applied in the sheep.

A detailed report of this investigation will appear elsewhere.

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