

Brief communication

DETERMINATION OF UDDER WEIGHT IN LIVE COWS^{*)}

For the examination of changes in the mammary blood flow in cows during the lactation period it is desirable to relate the blood flow to milk yield as well as to udder weight. Therefore, a method is required which will permit repeated determinations of the true udder weight in live animals. In goats and humans several authors have measured mammary volume by displacement of water and from alginate or plastic mesh moulds, and the accuracy of each method has been determined (see *Linzell* 1966). *Reinecke* (1925) and *Filipovič* (1928) made a few measurements by water displacement in cows, and *Linzell* (1966) made a wire and plastic mesh mould impregnated with alginate, but the accuracy has not been checked in cows. The following is a report on a practical method of making a mould of the udder of conscious cows and on its accuracy by comparison with the weight of the udder at death.

The method consists in making a mould of the udder in plaster of Paris with the animal in the standing position. Following an intravenous injection of 10 i.u. oxytocin, the udder is milked completely and smeared with a thin layer of glycerol. Then a plaster bandage is applied (Cellona® 15 × 200 cm). After setting, the plaster mould is removed and the holes for the teats closed. The opening at the base of the udder is partially closed and the plaster made watertight with further bandage and plaster.

The mould was weighed empty, then filled with water and weighed again, and the difference was assumed to be equivalent to the volume of the udder, and the weight at a specific gravity of 1.0 for udder tissue (see *Linzell* 1966).

The day before slaughtering three plaster casts (a, b, c) were taken of the udders of 17 cows (7 Red Danish Breed (RDM), 10 Jersey) and the mean of the three determinations of udder volume was compared with the weight of the empty udder after slaughtering of the cows. The results appear in Table 1.

^{*)} Supported by a grant from Statens almindelige Videnskabsfond.

Table 1. Udder volumes determined in vivo and after slaughtering.

Cow no.	Breed	In vivo				Udder weight after slaughtering kg	Difference from weight after slaughtering %
		a	b	c	average kg		
1919	Jersey	7.1	7.3	7.8	7.4	8.0	— 8
1920	„	5.2	6.1	5.7	5.7	5.2	+ 10
1921	„	8.0	7.3	7.9	7.7	6.5	+ 18
1923	„	10.9	10.6	10.9	10.8	10.2	+ 6
1924	„	8.4	8.1	8.2	8.2	9.2	— 11
1926	„	7.3	6.8	7.4	7.2	7.1	+ 1
1928	„	8.2	8.9	8.2	8.4	9.2	— 9
1929	„	9.4	8.9	8.9	9.1	8.4	+ 10
1931	„	6.1	5.9	6.5	6.2	7.9	— 22
1933	„	11.0	11.4	11.0	11.1	11.4	— 3
6	RDM	14.6	14.9	15.3	14.9	15.1	— 1
30	„	15.1	14.8	16.1	15.3	16.1	— 5
51	„	14.1	14.3	12.9	13.8	13.0	+ 6
52	„	13.2	13.9	14.8	14.0	12.6	+ 11
53	„	19.3	20.3	19.5	19.7	17.0	+ 16
62	„	23.9	22.2	21.5	22.5	18.4	+ 22
84	„	10.8	10.7	11.5	11.3	11.1	+ 2

The slight variations found at the three determinations in vivo show that the method yields reproducible results. However, deviations of up to $\pm 22\%$ between the calculated udder weight and the true udder weight were found after slaughtering. Estimation of the mean for all the cows reduced the difference to $+3\%$, and the correlation coefficient between the measured udder volume and the true udder weight was $r = 0.97$.

Thus the deviation of the measured udder weight from the true one is similar to that found by *Linzell* (1960, 1966) and *Gall* (1963) in goats using alginate moulds or displacement of water. So in spite of the deviations noted the reported method is considered applicable for estimation of the true udder weight in vivo.

Per Kjærsgaard

The Department of Pharmacology and Toxicology,
Royal Veterinary and Agricultural College,
Copenhagen, Denmark.

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(Received April 3, 1968).