

Brief communication

THE DIAGNOSTIC VALUE OF BLOOD SAMPLES TAKEN IN
CONJUNCTION WITH EXSANGUINATION OF COWS

The aim of the investigation was to establish whether blood samples collected at slaughter are of diagnostic value.

Material and Methods

The material consisted of 21 cows notified for emergency slaughter for unknown reasons. Immediately after blood sampling with a cannula from the jugular vein the cows were shot with a humane killer and bled by cutting of the large blood vessels of the neck. On that occasion a new blood sample was taken. After slaughtering, samples were also collected from the blood in the heart. Two blood samples were also collected from each of 13 normal dairy cows in order to discover errors of the methods used in the analyses. These samples were coded so as to be unidentifiable by those who performed the analyses. All blood samples were centrifugated within 2 hrs, and then analysed in respect of the serum content of Ca, Mg, inorganic P, Na, K, total protein, bilirubin and GOT. The methods of analysis are reported in another context (*Jönsson & Pehrson 1969*).

Results

The results of all analyses of the samples taken from the heart showed such large deviations from the initial samples taken from the living animals that they had no diagnostic value. For this reason they are not tabulated.

From Table 1 it will be seen that only for K did significant differences exist between the samples drawn with a cannula from the jugular vein and those taken by exsanguination, the latter having consistently higher values than the former.

Table 2 shows the differences between the samples taken with a cannula and those taken by exsanguination of the slaughtered cows, and the corresponding differences between the duplicate samples from the normal cows. With the exception of bilirubin

Table 1. Electrolytes, total protein, bilirubin (mg/100 ml) and GOT (Karmen units) in serum from cows bled with a cannula from the jugular vein (A) and from the same cows in conjunction with exsanguination at slaughter (B).

	Ca		Mg		Inorg. P		Na		K		Total protein		Bilirubin		GOT	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
n	20	20	20	20	21	21	21	21	20	20	21	21	19	19	18	18
\bar{x}	9.30	9.31	1.91	1.95	5.78	6.28	347.0	345.5	16.42	19.46	8.71	9.19	0.44	0.44	91.1	94.1
s	1.30	1.32	0.56	0.66	1.92	2.11	32.9	31.7	2.43	3.34	4.02	3.85	0.40	0.42	39.1	41.1
t	<1	<1	<1	<1	<1	<1	<1	<1	3.39**	1.35	<1	<1	<1	<1	<1	<1

Table 2. Differences and means of electrolytes, total protein, bilirubin (mg/100 ml) and GOT (Karmen units) in serum on blood sampling with cannula from the jugular vein and on exsanguination of the same cows at slaughter (A-B), and the corresponding figures for duplicate determinations on normal cows (C).

	Ca			Mg			Inorg. P			Na			K			Total protein			Bilirubin			GOT		
	A-B	C	C	A-B	C	C	A-B	C	A-B	C	A-B	C	A-B	C	A-B	C	A-B	C	A-B	C	A-B	C		
n	20	13	20	13	21	13	21	13	20	13	20	13	21	13	21	13	19	13	18	13	18	13		
\bar{d}	0.54	0.34	0.14	0.07	0.86	0.13	16.3	12.1	3.35	0.78	3.19	0.73	0.51	0.27	0.55	0.27	0.03	0.04	12.7	4.5	10.1	4.3		
s	0.58	0.33	0.16	0.08	0.93	0.14	18.1	7.9	2.84**	0.73	2.80**	0.73	0.51	0.03	1.79	0.01	0.01	10.1	4.3	2.16*	2.16*			
t	1.14	1.49	2.80**	2.80**	2.80**	2.80**	<1	<1	2.84**	2.84**	1.79	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1			
\bar{x}_{2n}	9.30	10.50	1.93	2.31	6.03	6.08	346.3	334.1	17.94	15.94	8.45	8.63	0.44	0.22	92.6	92.6	70.6	70.6	70.6	70.6	70.6			

the differences were throughout less in the duplicate determinations, even if a significant level was attained only for inorganic P, K and GOT.

Discussion

Analyses of blood samples collected by exsanguination in conjunction with slaughtering generally appear to be subject to greater errors than can be explained by errors in the analytical method. As regards serum K the errors are of such magnitude that serum K determination in blood obtained in this way are without value. As regards inorganic P and GOT the differences between samples before and after slaughtering were significantly greater than the respective errors of the analytical methods. The differences were not systematic, however, and were not numerically greater than samples taken in conjunction with exsanguination would still be of good diagnostic guidance. The same may be said of Ca, Mg, Na, total protein and bilirubin.

These results differ to some extent from those reported by *McCaughey* (1967). This may be due to differences in the magnitude of the errors of the analytical methods in different laboratories, and to differences in sampling. In our investigation we did not collect the blood which ran out directly after cutting of the blood vessels of the neck nor did sampling take place so late that the blood flow had started to cease. The reason for this was the desire as far as possible to avoid haemolysis and admixture of traumatized tissue,

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REFERENCES

- Jönsson, G. & B. Pehrson*: Studies on the downer syndrome in dairy cows. *Zbl. Vet.-Med.* 1969. (To be published).
McCaughey, W. J.: Letter to the Editor. *Vet. Rec.* 1967, 80, 33.