THE COMPOSITION OF THE MILK OF SPRINGBOK (*ANTIDORCAS MARSUPIALIS*), ELAND (*TAUROTRAGUS ORYX*) AND BLACK WILDEBEEST (*CONNOCHAETUS GNOU*)

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INTRODUCTION

One of the functions of the S.A. Lombard Nature Reserve is to rear and distribute game animals in the Transvaal. Springbok lambs are captured within one week after birth, and black wildebeest calves at the age of about one month, while the young of the eland can be handled at any age.

In captivity the young of game are usually fed on cow's milk, but most of them do not respond well to this and develop diarrhoea. A diet too high in lactose often causes violent attacks of diarrhoea resulting in high mortality of the young (Pinter 1962, Uspenskii and Salganskii 1952). It was thus considered desirable to determine the composition of the milk of certain African game species so that proper substitutes may be prepared.

METHODS

The springbok and eland from which milk was collected in the present study were fed mainly on green lucern, maize meal and dried hay (grasses) supplemented by animal licks containing molasses, bone meal, maize meal, iron, copper, sodium, potassium, calcium, etc. The black wildebeest grazed on natural pasture.

Twenty-six samples of springbok milk were collected from the same animal at intervals of about one week from the start to the end of the lactation period, which lasted eight months. The first sample in the case of the eland represented the colostrum, while the samples of the black wildebeest were collected towards the end of the lactation period.

Samples were obtained by digital manipulation from single animals of each species in captivity, except for the black wildebeest, where the two samples originated from two animals just after they had been captured on the reserve.

It was difficult to obtain milk from the springbok in the colostrum period. During the first three days of lactation only about 50 ml. of milk could be obtained with each attempt, which precluded a complete analysis. The ewe was separated from her lamb for 12 hours prior to collecting milk.

TABLE 1

COMPOSITION OF THE MILKS OF BLACK WILDEBEEST, ELAND AND SPRINGBOK

Sample size in brackets

	*Black wildebeest***(2)		*Eland colostrum* (1)	*Eland* post colostrum* (2)		*Springbok** (26)	
	Range	*Mean*		*Range*	*Mean*	*Range*	*Mean*
g/100g							
Water	80·1 – 80·3	80·2	68·4	–	78·6	72·8 – 82·9	78·1
Protein	5·7 – 8·0	6·9	15·0	7·2 – 8·0	7·6	5·5 – 11·5	8·0
Fat	7·3 – 10·1	8·7	10·0	–	9·8	5·2 – 13·3	8·9
Lactose	2·6 – 4·8	3·7	3·9	4·7 – 5·0	4·9	3·9 – 5·2	4·8
Ash	0·9 – 1·1	1·0	1·3	1·0 – 1·2	1·1	0·8 – 1·2	1·1
mg/100g							
Calcium	213·0 –229·0	221·0	225·0	216·0 –255·0	235·5	196·0 –304·0	261·2
Magnesium ..	–	21·1	26·0	26·0 – 28·0	27·0	22·0 – 58·7	30·8
Phosphorus ..	49·2 –102·0	75·6	176·0	180·0 –201·0	190·5	144·0 –200·0	170·8
Iron	0·07– 0·09	0·08	0·20	0·11– 0·13	0·12	0·10– 0·51	0·21
Copper	–	0·09	0·05	0·05– 0·06	0·05	0·01– 0·15	0·05
Sodium	54·9 –109·0	81·9	202·0	41·0 – 70·0	56·0	35·0 – 88·8	50·0
Potassium	105·0 –124·0	114·5	87·0	119·0 –133·0	126·0	79·0 –150·0	119·7
Thiamin	–	0·07	0·01	0·09– 0·11	0·10	0·07– 0·16	0·11
Riboflavin ..	0·17– 0·24	0·21	0·35	0·29– 0·32	0·30	0·17– 0·42	0·31
Nicotinic acid† ..	0·28– 0·69	0·49	–	–	–	0·17– 1·30	0·59
Vitamin C ..	0·36– 1·30	0·83	0·70	1·60– 2·60	2·10	1·20– 4·18	2·22
Tryptophan ..	56·3 –101·0	78·7	296·0	–	57·0	98·0 –155·0	129·5
Nicotinic acid equivalent ..	1·62– 1·96	1·78	–	–	–	2·31– 4·18	3·07

* From one animal

**From two animals

† Not detected in eland milk

The samples were transferred to polythene bottles and cooled immediately after collection. All samples were frozen and transported as soon as possible to the laboratory, a distance of 250 miles. It was not always possible to commence analysis of the samples immediately on receipt and they had to be stored in a deep freeze.

The standard analytical methods of the Food Chemistry Division, National Nutrition Research Institute, Council for Scientific and Industrial Research, Pretoria, were used.

For some unknown reason nicotinic acid could not be detected in the eland milk by the microbiological method employed for the estimation of the vitamin. Since the animal body can convert the amino-acid tryptophan to nicotinic acid, the tryptophan content of the milk was also determined. Sixty mg. tryptophan is equivalent to about 1 mg. nicotinic acid and this theoretical value added to the nicotinic acid content as determined gives the nicotinic acid equivalent value.

RESULTS AND DISCUSSION

Results are presented in Table 1.

The springbok is a nervous species and in view of the fact that the ewe was handled only about once a week complete milk ejection was unlikely. A female that was milked immediately after she had been shot in April, 1961 yielded 525 ml. of milk, while the largest volume collected from the captive animal in one attempt was 170 ml. Incomplete milk ejection could have a considerable effect on the composition of a milk sample, particularly on its fat content, and this may account for the great variation encountered in the fat content of springbok milk.

ACKNOWLEDGMENTS

The authors are indebted to Dr. F. W. Quass, then director of the National Nutrition Research Institute of the C.S.I.R. for his co-operation on this project and to the laboratory staff of the Food Chemistry Division who did the analyses. They also wish to express their sincere appreciation to Mr. S. S. du Plessis, Division of Nature Conservation, Transvaal Provincial Administration, for considerable assistance in the preparation of this report.

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