JOURNAL OF ANIMAL PRODUCTION
OF THE
UNITED ARAB REPUBLIC
Vol. II 1962 No. I

COMPARATIVE STUDIES ON THE FEEDING OF DAIRY BUFFALO CALVES ON COW'S AND BUFFALO'S MILK.

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SUMMARY

A comparative study was made to find out the effect of rearing dairy buffalo calves on either cow's or buffalo's milk during a suckling period of 24 weeks. The calorific value of either cow's milk or that of the buffalo was the same (183.000 cal.) along with the same amount of plant food (87.7 kg. S.V.) Experimental animals (23 female buffalo calves) were fed in groups, while milk was given individually. Results obtained and recommendation suggesed are given in the following :

(1) The maximum daily gain in the group fed on buffalo's milk exceeded that in the group fed on cow's milk by about 18%.

(2) The average daily gain in the group fed on cow's milk was less than that in the group fed buffalo's milk by about 28%.

(3) The average growth measure in the group fed on cow's milk was 2.771, while it was only 2.005 in the group fed buffalo's milk.

(4) Buffalo's milk seems to be more suitable for feeding buffalo calves than cow's milk. Therefore, it is not recommended to rear buffalo calves on cow's milk.

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Introduction

Several investigations have been undertaken to raise calves with small amounts of whole milk (Aitken, 1949 ; Comberg and Zschommler, 1956 ; Ghoneim et al, 1958 ; Ghoneim et al, 1956 ; Jarvis et al, 1952 ; Kirsch, 1957 ; Meregalli, 1955 ; Neville et al, 1952 ; Prasad, 1945 and Starosel, 1954).

Ghoneim and Abou-Hussein (1959) succeeded in reducing the milk allowance per calf from 469 lb. buffalo milk (or 595 lb. Cow milk) down to 366 lb. buffalo milk(or 494 lb. cow milk) with no retarding effect on the growth of the calves. The previous milk allowance was equal to 34.2 kg. starch value, i.e. 183.000 Cal. The total food requirements (milk and plant food) was 122 kg. starch value.

Since the buffalo's milk is preferred for liquid consumption than that of the cow it was thought to study the possibility of feeding suckling buffalo calves on cow's milk.

Material and Methods

Animals: 23 female newly-born buffalo calves were bought from the neighbourhoods of the Faculty's farm at Giza. They were kept indoors at the Animal Nutrition Experimental station. They were of an average age of four weeks.

Feeding: Feeding followed the similar lines suggested by Ghoneim and Abou-Hussein (1959) and Ghoneim et al (1956, 1958).

Calves were given their milk meals individually using the nipple pails. The nipple pail method is persumed to have an advantage in that of the calf takes the milk more slowly when fed in this way and thus it is less likely to have digestive disturbances. Calves were given the milk up to the 15th week. The plant foodstuffs used were green clover, barley grains and wheat straw as shown in Table 1.

The daily starch value of the plant food was 0.05 kg. at the 4th week increasing gradually till it reached 1.00 kg. at the 24th week. The details of the feeding procedure are given below.

Treatment	Whole buffalo milk lb.	Whole cow milk lb.	Starch value			
			Milk kg.	Plant food kg.	Total S.U. kg.	Daily S.U. kg.
A	366	—	34.9	89.9	124.8	0.762
B	—	494	34.9	89.9	124.8	0.762

It is noticed that the total and daily starch value in the two treatements were the same; 122 kg. and 0.762 kg. respectively. The digestible protein allowances were not less than those recommended by Ghoneim (1950) for growing calves.

Recording weights: Calves were individually weighed every four weeks, before feeding; the average of three successive daily weighings was taken to the nearest kilogram.

Results and Discussion

In Treatment "A" (Table 2), the maximum daily gain was 0.421 kg. The average daily gain of the calves growing at a rate of 30% less than the maximum rate of growth was 0.380 kg.

The corresponding maximum and average daily gain in Treatment "B" was 0.346 kg. (Animal No. 19) and 0.275 kg. (Animals No. 14, 15, 16, 19). The average growth measure in Treatment "A" was 2.005 while it was 2.771 in Treatment "B".

These results showed that the maximum daily gain in Treatment "A" exceeded that in Treatment "B" by 17.81%, while the average daily gain in Treatment "B" was less than that in Treatment "A" by 27.63%. It seems that buffalo's milk is more suitable for rearing buffalo calves than cow's milk. Therefore, buffalo milk is more to be recommended than cow's milk for feeding suckling buffalo calves. Table 2 shows clearly these results.

It is noticed that the general average for daily growth of female buffalo calves during the suckling period was 0.551 kg. (Ghoneim et al 1956), being higher than those obtained with the experimental animals. Animals experimented on, being bought from the neighbourhoods had a lower daily gain than the dairy herd at the Animal Nutrition Experiment Station of the Faculty.

TABLE 1.—Feeding Chart for Weekly Allowances of Each dairy Calf during the Suckling Period.

Age in Weeks	Whole milk		Feeding value in milk		Feeding stuffs in plant food			Feeding value in plant food		Total value	
	Cow's lb.	Buffalos lb.	Starch value kg.	Digestible protein kg.	wheat straw kg.	clover kg.	Barely kg.	Starch value kg.	Digestib. protein kg.	Starch value kg.	Digestib. protein kg.
1	Colost.	Colost.	—	—	—	—	—	—	—	—	—
2	49	38	3.61	1.38	—	—	—	—	—	3.61	1.38
3	49	38	3.61	1.38	—	5.25	—	0.35	0.08	3.96	1.46
4	42	33	3.14	1.20	—	5.25	—	0.35	0.08	3.49	1.28
5	42	33	3.14	1.20	—	10.50	0.875	1.40	0.22	4.54	1.42
6	42	33	3.14	1.20	—	10.50	0.875	1.40	0.22	4.54	1.42
7	35	33	3.14	1.20	—	10.50	0.875	1.40	0.22	4.54	1.42
8	35	33	3.14	1.20	—	10.50	0.875	1.40	0.22	4.54	1.42
9	35	28	2.66	1.02	—	14.00	1.75	3.15	0.52	5.81	1.54
10	35	28	2.66	1.02	—	14.00	1.75	3.15	0.52	5.81	1.54
11	35	24	2.28	0.87	—	14.00	1.75	3.15	0.52	5.43	1.39
12	28	18	1.71	0.65	—	14.00	1.75	3.15	0.52	4.86	1.17
13	21	14	1.33	0.51	0.875	14.00	3.50	4.55	0.64	5.88	1.15
14	14	10	0.95	0.36	0.875	14.00	3.50	4.55	0.64	5.50	1.00
15	7	4	0.38	0.15	0.875	14.00	3.50	4.55	0.64	4.93	0.79
16	—	—	—	—	0.875	14.00	3.50	4.55	0.64	4.55	0.64
17—20	—	—	—	—	3.500	21.00	5.25	5.95	0.76	5.95	0.76
21—24	—	—	—	—	3.5500	21.00	7.00	7.00	0.89	7.00	0.89
Total ...	469	366	34.89	13.34	24.50	332.5	73.5	89.90	12.38		

TABLE 2.—Total and Daily Gain of the Dairy Calves During the Suckling Period.

Treatment	Animal No.	Wheight at the beginning kg.	Weaning weight kg.	Total gain weight kg.	Daily gain weight kg.	Relative daily weight assuming the highest 100	Growth measure
A	1	59	104	45	0.338	80.36	2.254
	2	68	90	22	0.163	39.29	4.618
	3	59	76	17	0.128	30.36	5.953
	4	59	72	14	0.105	25.00	7.257
	5	58	90	32	0.241	57.14	3.162
	6	61	87	26	0.195	46.14	3.908
	7	46	85	39	0.293	49.64	2.601
	8	60	75	15	0.113	26.79	6.743
	9	49	105	56	0.421	100.00	1.810
	10	71	91	20	0.150	35.71	5.080
	10	71	91	20	0.150	35.71	5.080
	11	57	77	20	0.150	35.71	5.080
B	12	59	75	16	0.120	34.78	6.350
	13	58	93	35	0.263	76.09	2.897
	14	53	85	32	0.241	69.57	3.162
	15	53	86	33	0.248	71.74	3.072
	16	64	95	31	0.233	69.39	3.270
	17	62	108	46	0.246	100.00	2.202
	18	72	95	23	0.175	50.00	4.405
	19	62	82	20	0.150	43.48	5.080
	20	68	85	17	0.128	36.96	5.953
	21	60	80	20	0.150	43.48	5.080
	22	64	87	23	0.173	50.00	4.405
	23	59	85	26	0.195	56.52	3.908

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الملخص

دراسة مقارنة تغذية العجلات الجاموسى على اللبن البقرى واللبن الجاموسى

فى بحوث عدة أجريت فى محطة تجارب تغذية الحيوان بكلية الزراعة جامعة القاهرة توصلنا إلى معرفة أقل كمية من اللبن حرارته ١٨٣ ألف سعر تلزم لرضاعة العجول دون أدنى تأثير ضار على نموها ، كما توصلنا إلى معرفة أن ١٢٠ كجم معادل نشا هى الكمية النشوية الكلية اللازمة لتغذية الحيوانات الرضيعة حتى الحيوانات الرضيعة حتى عمر ستة أشهر . ولقد ثبت لدينا أيضاً أنه يمكن إحلال مخلوط اللبن الكامل والفرز محل ما يساويه فى القيمة النشوية من اللبن البقرى أو الجاموسى الكامل الرضاعة العجول والعجلات .

ولتكملة هذه السلسلة من الدراسات ، أجريت هذه التجربة لمقارنة تغذية عجلات الجاموس الرضيعة على اللبن البقرى الكامل واللبن الجاموسى الكامل . ولقد كانت القيمة الحرارية للبن المقدم سواء البقرى أو الجاموسى هى ١٨٣ ألف سعر بالإضافة إلى مواد علف نباتية ذات قيمة نشوية مقدارها ٨٧ر٧ كجم معادل نشا . ولقد غذيت حيوانات التجربة وعددها ٢٣ عجلة جاموسى لبانى على مواد العلف فى مجاميع بينما رضعت اللبن صناعياً « بطريقة الجردل » كل عجلة من هذه العجلات انفرادياً ، ولقد كانت مواد العلف المقدمة لهذه العجلات هى البرسيم وحبوب الشعير المطحونة وتبن القمح . ولقد تدرجت القيمة النشوية اليومية المقدمة للحيوانات لمواد العلف النباتية فكانت ٠٫٥٠ كجم نشا فى عمر أربعة أسابيع حتى وصلت إلى ١٫٠٠ كجم نشا فى عمر أربعة وعشرين أسبوعا أما كمية اللبن الكلية فكانت ٤٩٤ رطل لبن بقرى كامل للمجموعة التى تغذت

على اللبن البقرى ، ٣٦٦ رطل لبن جاموسى كامل للمجموعة التى تغذت على اللبن الجاموسى ، وكانت القيمة النشوية للبن فى الحالتين مقدارها ٣٤٫٩ كجم معادل نشا .

وكانت النتائج على النحو التالى :

١ — أن أقصى نمو يومى مكتسب فى المجموعة التى تغذت على اللبن الجاموسى الكامل زاد عن أقصى نمو مكتسب فى المجموعة التى تغذت على اللبن البقرى الكامل بمقدار ١٨٪ .

٢ — أن متوسط النمو اليومى فى المجموعة التى تغذت على اللبن البقرى الكامل كان أقل من متوسط النمو فى المجموعة التى تغذت على اللبن الجاموسى الكامل بمقدار ٢٨٪ .

٣ — أن متوسط معادل النشا اللازم لإنتاج كيلوجرام نمو فى المجموعة التى تغذت على اللبن البقرى الكامل كان ٢٫٧٧١ بينما كان ٢٫٠٠٥ فقط فى المجموعة التى تغذت على اللبن الجاموسى الكامل .

من كل ما سبق يتضح جلياً أن اللبن الجاموسى الكامل أكثر ملاءمة لتغذية العجلات الجاموسى من اللبن البقرى الكامل ولذلك ننصح بتغذية العجول والعجلات الجاموسى عليه .