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Effect of feeding complete feed block on muscle score of Surti buffalo calves (*Bubalus bubalis*)

Parth J Maheta and Shital K Kalasava

Abstract
The present investigation entitled "Effect of Feeding Complete Feed Block on muscle score of Surti Buffalo Calves" was carried out from January, 2022 to April, 2022 on Surti Buffalo calves maintained at Livestock Research Station, College of Veterinary Science & Animal Husbandry, Navsari, Kamdhenu University, Gandhinagar, Gujarat. For this experiment 16 Surti Buffalo calves aged more than three months were selected. Experimental animals were divided into 2 groups of 8 calves each of comparable age, sex and body weight. T_1 group was offered conventional feed and T_2 group was offered complete feed block. Animals in the both the groups were maintained under similar managemental practices. Muscle score of buffalo calves was observed fortnightly from initial to 90th day of experiment.
However, overall muscle score was higher in T_2 as compared to T_1 group (3.12±0.08 vs. 3.00±0.09) though it was not significant.

Keywords: Complete feed block, buffalo, Surti buffalo calves, muscle score

1. Introduction
Farmers of Asian continent use tamed water buffaloes for agriculture and other socio-economic purpose and popularly known as "The living tractor of the East." (Bakkannavar *et al.* 2010) [1]. Buffaloes are known as Asia's "Black Gold" and have become the choice of milch animal for farmers (Presicce, 2007) [3] due to its attractive colour and economic value to the society.
The Surti buffalo (*Bubalus bubalis*) is one of India's most well-known buffalo breeds. The Surti buffalo breed is bred in Gujarat's Kaira and Baroda districts. The body is well-shaped and medium in size, with a wedge-shaped barrel. The head of this breed is quite large with straight back conformation. This breed has medium-sized animals with sickle-shaped horns and prominent eyes. It's either black or brown in colour. The breed is specifically distinguished by two white marking, one around the jaw and the other around the brisket. Milk output varies between 900 and 1300 kg with high fat content (8-10%). The age at first calving is 40-50 months, with inter-calving time of 400-500 day. Birth weight of calves varies from 21 to 25 kg (Thamilvanan *et al.* 2009) [5].
Animal owners frequently did not chaff and soak the straw or stover, and feed it to their animals in un-chopped or semi-chopped forms. Furthermore, un-chopped straw allows the animal to selectively choose digestible portion, while leaving less digestible, rough parts behind, resulting in increased wastage; moreover, the animal must expend more energy chewing un-chopped materials, resulting in increased energy expenditure (Chander, 2010) [2] and ultimately reduce the production performance in animals.
The terms such as "Complete Feed" and "Total Mixed Ration" (TMR) or "Complete Ration" (CR) are inter-changeable. As the name suggests, a complete feed block is an animal edible product created by compacting complete feed consisting of roughage and concentrate into a predetermined proportion capable of meeting the nutrient requirements for the targeted animal production system. The CCFB (Compressed Complete Feed Block) is a ready-to-eat complete diet that is convenient, affordable and multi-nutrient correct (Salem and Nefzaoui, 2003) [4] ration for ruminants. Which results in a more stable and optimal environment for rumen microbial fermentation, which ultimately improve dry matter intake (DMI) and production performance (Verma *et al*. 1996) [6].

2. Materials and Methods
The research study entitled "Effect of Feeding Complete Feed Block on Muscle Score in calves of Surti Buffalo (*Bubalus bubalis*)" was carried out in Surti Buffalo breed from January

to April 2022, for a period of 90 days. The study was conducted at the Livestock Research Station, Kamdhenu University, Navsari. This unit is located at 20.95˚N 72.93˚E and at an elevation of 11.89 m above Mean Sea Level (MSL). The climate of the area is tropical with average maximum and minimum temperatures of 40˚C (104˚F) and 17 ˚C (62.6˚F) respectively. The experiment was undertaken to study the effect of complete feed block on growth performance of Surti buffalo calves under farm condition. The calves were divided into two groups, control (T_1) and treatment (T_2) comprising of eight buffalo calves in each group on the basis of age, sex and body weight. In T_1 group conventional feed and in T_2 group complete feed block was offered to the animals.

Ingredients of complete feed block.

Table 1: Ingredients of complete feed block

Ingredients	Proportion %
Millet bran	50
Molasses	10
Tech. Graded Urea	1
Calcite powder	2
Grinded salt	2
Wheat straw	25
Concentrate	10
Total	100

The calves were housed individually in well ventilated, clean and dry pucca shed with facilities for feeding and watering. The shed was disinfected with potassium permanganate solution, sanitized and white washed prior to the introduction of calves.

Each buffalo calves were tied with rope near the manger to ensure that it received feed individually.

Each animal was given different identification number. The control group (T_1) was kept on conventional feeding as per farm routine, while treatment group (T_2) was fed compressed complete feed block (CCFB). Both the diets were made iso-nitrogenous and iso-caloric to meet the requirement for growth as per ICAR standards (2013). The calves were de-wormed and vaccinated before the start of the experiment and group housed on cemented concrete floor with provision of feeding and watering. All the calves were fed conventionally as per the requirement of adaptation period of 7 days.

2.1 Muscle Scoring

Muscle scoring was recorded at fortnightly interval as per given table.

Table 2: Muscle score chart in calves

Muscle score	Description
1.0	Thrifty & moderately thick throughout
2.0	Thrifty &slightly thick throughout
3.0	Thrifty thin throughout
4.0	Thrifty & extremely thin throughout

2.7 Statistical Analysis

Data collected during course of experiment was first tabulated using descriptive statistics and analyzed by t-test and mean within the group was compared using Duncan Multiple Range Test (DMRT)with the help of SPSS software.

3. Results and Discussions

3.1 Muscle score in calves

Table 3: Mean ± S E of muscle score in calves

Day of observations	T1 (N=8)	T2 (N=8)	t-value	P-Value
Initial	3.75^{a}±0.13	3.81^{a}±0.09	-0.386	0.705
15th day	3.50^{ab}±0.16	3.62^{ab}±0.12	-0.607	0.554
30th day	3.06^{bc}±0.17	3.25^{bc}±0.13	-0.851	0.409
45th day	2.93^{bc}±0.22	2.87^{c}±0.15	0.231	0.821
60th day	2.75^{c}±0.23	3.12^{c}±0.15	-1.342	0.201
75th day	2.62^{c}±0.22	2.93^{c}±0.23	-0.947	0.360
90th day	2.43^{c}±0.23	2.25^{d}±0.16	0.683	0.506
Overall	3.00±0.092	3.125±0.085	-0.921	0.359
F- value	5.634**	10.663**	-	-

* & ** indicates significance at P<0.05 and P<0.01, respectively across rows and columns means bearing different superscript within column differ significantly (P<0.05).

The mean value of muscle score at initial, 15th, 30th, 45th, 60th, 75th and 90th day of study as well as overall muscle score for T1 group was 3.75±0.13, 3.50±0.16, 3.06±0.17, 2.93±0.22, 2.75±0.23, 2.62±0.22, 2.43±0.23 and 3.00±0.092 moreover for T2 group was 3.81±0.09, 33.62±0.12, 3.25±0.13, 2.87±0.15, 3.12±0.15, 2.93±0.23, 2.25±0.16 and 3.125±0.085. The overall mean of muscle score in T2 group was higher than T1 group through the difference was not significant between groups. The muscle score was almost similar in both the groups at initial. Muscle score was also higher in T2 group of calves compared to T1 group on all the test days except 45th and 90th days. The F-values were significant in both the groups. Muscle scoring was better with TMR though the difference was not significant.

Wongnen, (2007) conducted study on feed supplementation of UMMB in Crossbred dairy cattle, group divided into three categorized *viz*. MUMMB (Medicated urea molasses block), UMMB (urea mineral molasses block) and control. The result showed increasing trend in body condition score in every group in dairy cattle.

4. Conclusions

Overall body weight of T1 was higher than T2 group of calves though the difference was not significant. Overall body length, height at wither, heart girth and paunch girth of T1 was higher than T2 group of calves though the difference was not significant. Overall muscle score of T2 was higher than T1 group of calves though the difference was not significant.

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