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LIST OF ABBREVIATIONS

Abbreviation	Definition
ADF	Acid detergent fiber
bST	Bovine somatotropin
BW	Body weight
CF	Crude fiber
CP	Crude protein
d	Day
DM	Dry matter
EE	Ether extract
FGR	Feed conversion ratio
kg	kilogram
min	minute
ml	milliliter
NDF	Neutral detergent fiber
TDN	Total digestible nutrient
wk	week

6. Summary

The system in Egypt for milking buffalos makes the owners separate calves from dams as early as possible, which leads to high losses in calves but, when calves found a replacers to milk with a similar constituent to a buffaloes milk this lead to decrease losses and increase numbers of replacement heifers which resemble a base stone in herd making. So the aim of our work was based on finding a replacement to buffalo milk that keeps the calves healthy with regard to compare growth performance, some blood metabolic profile for protein, lipids and minerals for calves fed on natural whole buffalo milk with those on commercial and modified milk replacers.

This work was done on 24 Egyptian buffaloes calves, aged (5±2) days of life, average weight 36±3 kg, were purchased from an area sale barn. Using a randomize complete block design, with initial weight as the blocking factor, calves were assigned to be fed on whole buffaloes milk (22.86% crude protein, 40%fat), commercial milk replacer (22.5% crude protein, 23.5% fat), modified milk replacer (1) (19.64% crude protein, 29.29% fat) or modified milk replacer (2) (17.9% crude protein, 34% fat). Chemical composition of milk and milk replacers are shown at (Table 1).

The experiment was conducted for 6 weeks on the calves at age 15 days old, before which the diet for the groups are the same,

(commercial milk replacer), to put all animal in the same environment. At the age 15 days old, the 4 experimental diets were used, each for one of the 4 experimental groups with ad libitum offering to calf starter for all groups. The physical and chemical composition of the starter offered to calves is illustrated in Tables (2 and 3).

Calves were bedded on crushed rock without additional bedding to prevent consumption of material that might confound results on growth.

The results demonstrated that growth performance as represented by weight gain was highest for GR (1) for all the trial period, followed by GR (4) then GR (2) and ended with GR (3), and the feed conversion ratio (FCR), for all the trial period, was highest for GR (4) then GR (1) followed by GR (3) and GR (2).

Total protein values in the serum showed no significance all over the trial time that indicate the stability of liver function, as will as, total globulins which indicate that calves receive colostrum at enough quantity, while albumin differ at beginning then appeared with no significance difference. Cholesterol and triglycerides are differ from group to another and from period to another, this may be due to changes in quantity of fat taken by each group as will as the type of fat from milk fat to vegetable fat.

Serum mineral estimation demonstrated non significant difference for calcium and magnesium by the end of the trial. However, the inorganic phosphorus showed significant difference among groups which might be attributed to the effect of dietary source of phosphorus or its availability

Clinical observation demonstrated scour and alopecia for the groups fed milk replacers, these disorders might be attributed to the high dietary fat content and zinc availability in milk replacers, respectively.

7. Conclusion

From the results of the current study, it could be concluded that:

1. A favorable effect of rumen inert fat supplementation on FCR, and BWG after the 6th week of age.

2. Ca, P, Mg and Zn as will as the other element should be carefully given in the starter to avoid the deficiency symptoms which will appear from the 3rd weeks of life when using milk replacer contain vegetable sources of protein and fat.

3. Feeding on milk replacers and supplementation of inert fat did not affect significantly the blood constituent for proteins and globulins as reflecting to immuno status of the calf. However, it significantly affects the lipid profile as it affected by dietary protein and lipid content and source.

Generally, the current study indicated that addition of inert fat (Magnapac) to commercial milk replacer in ratio up to 13.125% will be useful after the 6th week of life as it will increase FCR and increase BWG, with saving amount of DMI.