



Immune response and milk production of ewes fed salt tolerant forages as a replacement of berseem hay

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Objectives

This study aimed to evaluate the viability of complete replacement of berseem hay in the diet of ewes with (Cassava or Acacia or Atriplex) on ewes and lambs immunity, ewes biochemical parameters, and milk production.

Materials & methods

Animals:

40 late pregnant Barki ewes were randomly allocated into 4 experimental diets (n=10/treatment).



Treatments:

- ❖ Control (concentrate + berseem hay) at 60:40 on (DM) basis.
- ❖ 3 Treatments (control diet completely replaced of berseem hay with Cassava or Acacia or Atriplex).



Sampling:

- ❖ Representative samples of the experimental diets as TMR were collected weekly.
- ❖ Colostrum and lamb blood samples were collected at 2, 6, 12, and 24 h after parturition.
- ❖ Milk production and composition were measured one week after parturition and lasted weekly for more 8 weeks

Chemical analysis:

Immunoglobulin (IgG and IgM), milk composition and lambs performance.

Results

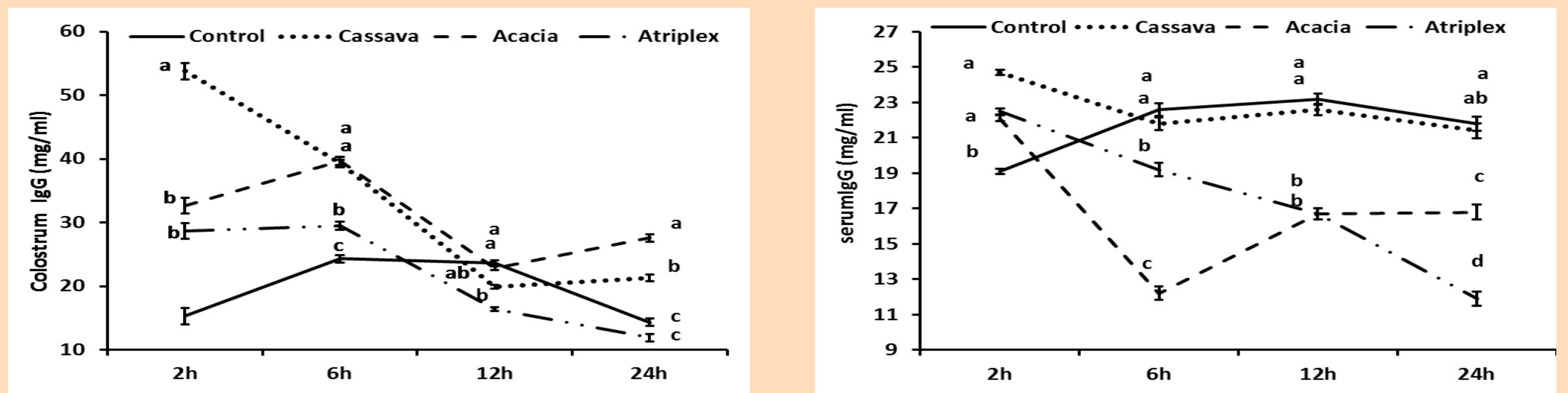


Fig. 1. Treatment × time interaction means (±SEM) for ewe colostrum IgG and lamb serum (mg/ml) concentrations. a,b,c,d Means within times with unlike letters differ (P<0.05).

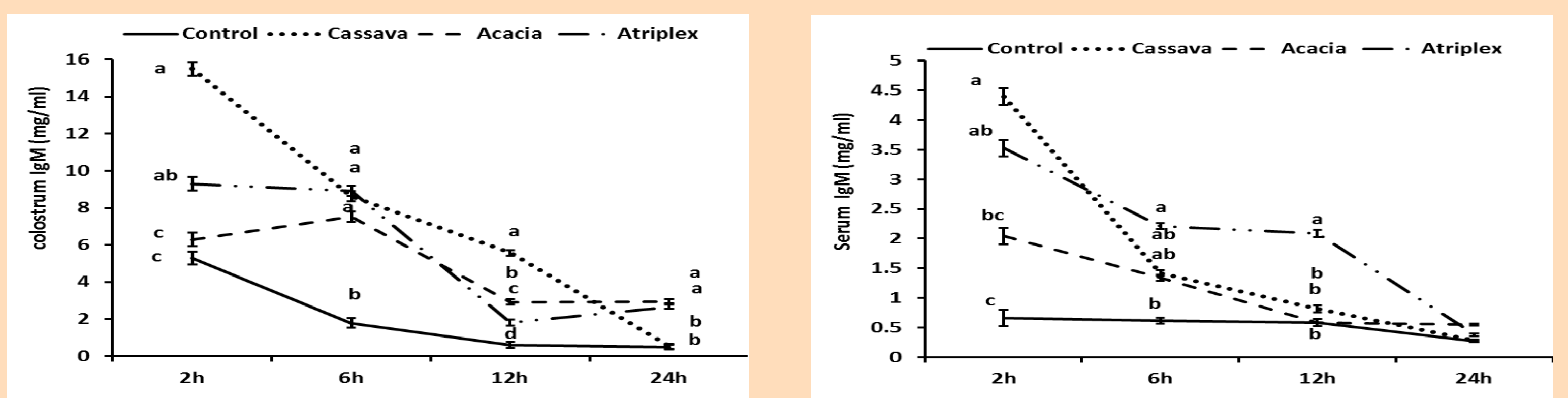


Fig. 2. Treatment × time interaction means (±SEM) for ewe colostrum IgM and lamb serum (mg/ml) concentrations. a,b,c,d Means within times with unlike letters differ (P<0.05).

Table 1. Effect of feeding salt tolerant forages compared with berseem hay on milk yield, milk composition and somatic cell count of Barki ewes

Variable	Experimental diets				SEM	P-value		
	Control	Cassava	Acacia	Atriplex		Diet	Time	Diet × Time
Milk yield (kg/day)	0.813 ^c	1.08 ^a	0.66 ^d	0.93 ^b	0.01	<0.01	<0.01	<0.01
Milk composition (%)								
Fat	4.92	4.85	5.05	4.83	0.08	0.900	0.505	0.05
Protein	3.77 ^b	3.91 ^a	3.66 ^b	3.97 ^a	0.01	0.01	0.176	0.303
Lactose	5.08	5.01	5.03	5.09	0.01	0.41	0.220	0.147
Solids not fat	9.51 ^c	10.2 ^b	10.4 ^b	11.4 ^a	0.03	0.01	0.069	0.316
Ash	0.66 ^c	0.70 ^b	0.71 ^b	0.79 ^a	0.001	0.01	0.367	0.457
Somatic cell count (log)	2.32	2.32	2.39	2.29	0.02	0.420	0.01	0.207

Data are mean values (n=10). SEM =standard error of the mean. PValue= probability of significant effect due to experimental diet. a,b,c,d Means with different letters within the row are different (P<0.05)

Table 2. Effect of feeding salt tolerant forages compared with berseem hay to Barki ewes on their lamb performance

Variable	Experimental diets				SEM	P-value
	Control	Cassava	Acacia	Atriplex		
Lamb birth weight (kg)	3.28	3.66	3.73	3.65	0.016	0.462
Lamb weaning weight (kg)	11.1 ^b	13.1 ^a	10.9 ^b	11.3 ^b	0.305	0.041
Lamb daily weight gain (g/d)	200 ^b	230 ^a	201 ^b	203 ^b	0.001	0.043

SEM =standard error of the mean. PValue= probability of significant effect due to experimental diet. a,b Means with different letters within the row are different (P<0.05)

Conclusion

Cassava, Acacia and Atriplex are valuable alternatives to berseem hay in lactating Barki ewes diets without compromising immunity and milk production, among the experimental forages, Cassava was more effective than Acacia and Atriplex but there is need to elucidate the amino acid profile of Cassava leaf.

