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REPRODUCTIVE PERFORMANCE OF BUFFALO AND FRIESIAN CALVES AS AFFECTED BY FLAVOMYCIN GROWTH PROMOTER

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SUMMARY

The effect of Flavomycin supplementation of three levels; 0.0 (control), 30 and 50 mg/head/day in the ration on reproductive performance of female and male Friesian and buffalo calves was studied. A total of 60 calves, 30 Friesian (15 females and 15 males and 30 buffalo (15 females and 15 males), were used. The addition of Flavomycin started at 100 kg body weight and lasted till conception of females and 400-420 kg body weight of males.

Flavomycin supplemented female groups reached puberty earlier (P<0.01) than the control and subsequently both age at conception and at first calving were also earlier in supplemented Friesian (P<0.01) and buffalo heifers (P>0.05). Number of services/ conception was smaller (1.2) in Flavomycin group (50mg) compared with the control (1.4) of Friesian, while the corresponding numbers were 1.3 and 1.5 in buffalo.

Most physical semen characteristics of Friesian males at puberty were improved (P<0.05) by the presence of Flavomycin in the ration. This improvement was related to the positive significant (P<0.05) effect of Flavomycin on body weight, testes size and testosterone level. This effect was not statistically significant in the case of buffalo males. Epididymal sperm reserves were positively (P<0.05) affected by Flavomycin. Friesian males raised on 50mg/head/day had higher values of total epididymal sperm reserves and sperm cell per gram of testicular tissue than the control. This effect did not show any particular trend and was not significant in the case of buffalo males.

Keywords: Flavomycin, reproductive performance, buffalo calves, Friesian calves.

INTRODUCTION

It has been known that the purpose of growth promoting feed additives is to improve the efficiency of feed and enhancement of growth rate. The effects of Flavomycin as a growth promoter were investigated by EL-Kholy (1991); Kolpfenstein and Sindi (1991);

Sadek et al. (1992) and Soroor (1993). The results of these investigations were variable according to the level of Flavomycin added, breed and age of animal and sex. Meanwhile most if not all of these investigations were concentrated on its effect on daily gain, feed efficiency and carcass and meat production. Therefore, the purpose of this work was to investigate the effect of Flavomycin supplementation on reproductive performance of female and male buffalo and Friesian calves.

MATERIAL AND METHODS

The present study was conducted at the farm of Animal Production Department, Faculty of Agriculture, Minia University. Total of 60 calves; 30 buffalo (15 female and 15 male) and 30 Friesian (15 female and 15 male) were used. All calves were raised on natural suckling and weaned at 100 kg body weight. Three levels of Flavomycin (0, 30 or 50 mg/head/day active ingredient) were supplemented to the ration of both species. All animals were tied only during feeding and left free thereafter in the yard. Animals were fed individually according to N.R.C.(1984) standards based on body weight and daily gain. Supplementation of Flavomycin lasted until male calves reached slaughter weight (400-420 kg) for both species and until female calves reached conception. Water was freely available for calves all day long. Also, mineral mixture was supplied in salt licking stones.

Friesian (at 12 months of age) and buffalo (at 18 months of age) female calves were observed, twice daily (for one hour at 8:0 a.m and 4:00 p.m) by using teaser male, for the sign of the first estrus where both age and body weight were recorded. Number of services per conception was recorded for each female in each treatment and subsequently both age and body weight were recorded again at conception. The heifers which reached body weight of 350 kg or more and aged not less than 15 months were served and bred immediately when they were in heat, then they were watched for any return to heat. Pregnancy diagnosis was performed through rectal palpation after two months from the last natural service.

Puberty for all male calves was determined according to Hafez (1987) and by using artificial vagina for semen collection. Starting from mounting and erection behaviour of males (14 months for Friesian and 19 months for Buffalo males), semen was collected from each male (15 buffalo and 15 Friesian) using an artificial vagina, in which two ejaculates were collected weekly from each male till obtaining sperm cells in the collection. Semen volume (graduated collecting tube, ml), sperm progressive motility (closed circuit TV microscope and warm glass slide, %), semen pH (Whatman pH comparative indicator paper) and number of spermatozoa/ml (using a haemocytometer) were recorded for each ejaculate. Total and motile sperm output per ejaculate were calculated.

At slaughter, reproductive tracts (9 Friesian and 9 buffalo, representing the three Flavomycin levels) were removed and trimmed from fat. Epididymis was separated from testis. Weights of testis (without epididymis), epididymis (cauda, corpus and caput), accessory sex glands (ampullae, seminal vesicles and cowper's glands) and penis were recorded for each male. Testes circumference (cm) before slaughter was also recorded.

Epididymal sperm reserves and distribution (cauda, corpus and caput) were determined by direct count technique in homogenized epididymal tissue according to Abd Elhakeam et al. (1978). Blood samples were collected from jugular vein from each male at 9, 12, 15 and 18 for Friesian and 21 months of age for buffalo. Serum was obtained by centrifugation at 3000 r.p.m for 20 min. and stored in the deep freezer at 20°C for analysis. Assessment of total testosterone concentration was performed according to the method of Jaffe and Behman (1974) using Coat-A-Count I^{125} radioimmunoassay (RIA) kits purchased from Diagnostic products Corporation, Los Angeles, California, 90045 U.S.A. According to the manufactures information, the antiserum is highly specific for testosterone. Percent cross activity was 20% with 4-Estern-17-1-3-one, 16% with 11-Keto-testosterone, 3.3% with 5 x Dihydrotestosterone, 1.7% with Methyl-testosterone, 1.2% with 11-B.Hydroxytestosterone and less than 1% with other steroids. The intera-assay coefficient of variation was 4.8%.

Data were statistically analyzed according to the General Linear Model (GLM) and the differences between means were tested by Duncan's Multiple Range (SAS, 1992).

RESULTS AND DISCUSSION

Reproductive performance of Friesian and buffalo females and males:

1-Females reproductive performance:

The results (Table 1) indicated that age as first estrus (puberty) for both species was markedly affected ($P<0.05$) by the presence of Flavomycin in the ration. Females raised on 50 mg/head/day Flavomycin showed signs of first estrus earlier at 417 days and 631 days for Friesian and buffalo, respectively. The control group of both species showed the first signs of estrus at later age (495 and 728 days, resp.). Subsequently, ages at conception and at first calving were earlier in Flavomycin groups in both species, but the differences were highly significant ($P<0.01$) in Friesian (193 days earlier) and they were not significant in buffalo (27 days earlier) as shown in Table (1).

Meanwhile, number of services per conception was not significantly different between the control and treated groups in both species. However, this number was lower (1.2) for 50mg/head/day Flavomycin than that (1.4) for 30 mg and control groups of Friesian heifers. The same trend was observed for buffalo heifers in which Flavomycin groups had lower number of services /conception (1.3) compared to the control group (1.5).

Moreover, the average body weight at puberty for buffalo female calve was 300 kg, and it was slightly heavier for both Flavomycin groups (308 and 300 kg for 50 and 30 mg/head/day, respectively) than that (293 kg) of the control group (Table, 1), but the difference was not significant. Little is known concerning the precise effect of level of nutrition, or growth rates, on puberty in buffaloes (Dobson and Kamonpatana, 1986). In well nourished buffaloes the first signs of estrus occurs earlier compared to those under field conditions (Bhattacharaya, 1974). From the present study, it can be observed that the presence of Flavomycin in the ration hastened the attainment of puberty in buffalo female by about 3 months compared to the control group. This effect may be related to

Table 1. Puberty and reproductive traits of Friesian and buffalo females as affected by dietary flavomycin supplementation

Classification	Overall mean	Flavomycin/(mg/head/ day			Sig.
		0.0	30	50	
			Friesian		
Puberty age (day)	447±13.5	495±12.2a	430±14.5b	417±13.7b	**
Puberty wt. (Kg)	217± 8.4	222± 8.1	204±10.0	225± 7.0	NS
Conception age (day)	641±12.3	747±13.2a	620±11.4b	555±12.2c	**
Conception wt. (Kg)	377± 8.1	370±7.0	360± 9.8	380± 6.7	NS
No. service/conception	1.3±0.03	1.4±0.04	1.4±0.03	1.2± 0.02	NS
Age at calving (day)	914±12.2	1017±12.3a	900±13.4b	825±11.1c	**
Weight at calving (Kg)	452± 8.8	455± 8.0	430±10.1	470± 8.2	NS
			Buffalo		
Puberty age (day)	684±17.5	728±17.1a	675±20.0b	631±15.6b	**
Puberty wt.(Kg)	300± 8.9	293± 8.2	300±10.4	308± 8.1	NS
Conception age (day)	830±15.8	860±15.1	798±18.0	833±14.5	NS
Conception wt. (kg)	370± 8.6	365± 8.0	372±9.9	373±7.9	NS
No. service/conception	1.3±0.04	1.5±0.05	1.3±0.04	1.3±0.04	NS
Age at calving (day)	1143±18.5	1175±18.3	1106±20.0	1148±17.0	NS
Weight at calving (Kg)	466 ± 8.3	455±7.9	470±9.0	472±8.0	NS

** Highly significant ($P<0.01$) NS= not significant ($P>0.05$).

Flavomycin effect on growth rate and daily gain (El-Feel et al., 1997). In the present study the addition of Flavomycin in the ration significantly (P<0.01) fastened the age of puberty of Friesian females compared to the control group and this could be due to its effect on growth rate and daily gain (El-Feel et al., 1997). Furthermore, large differences in age at puberty reported on the female calves are usually attributed to differences in breed and a lack of uniform managerial and nutritional practices. It could be concluded, from the present study, that the addition of Flavomycin at the level of 30 to 50 mg/head/day in the rations of both Friesian and buffalo female calves could be used as a method to hasten the attainment of puberty and subsequently improve the reproductive performance of both species.

2-Males reproductive performance:

Puberty in males is related to the time of first ejaculation with motile sperm. Some physical semen characteristics, age, body weight and testes circumference at puberty of Friesian and buffalo bulls are presented in Table (2). Most physical semen parameters of Friesian bulls were improved (P<0.05) by Flavomycin. On the other hand this effect was not significant in buffalo bulls. Friesian control group had lower values of sperm concentration/ml, sperm concentration/ejaculate, motile sperm/ml and motile sperm/ ejaculate compared to those of Flavomycin treated groups (Table, 2). This improvement of physical semen characteristics of Friesian bulls at puberty due to Flavomycin could be related to its effect on body weight, testes size and weight, in which they had higher values in Flavomycin groups (especially 50 mg) than the control group (Table, 2). At the same time it was observed that Flavomycin group had higher testosterone levels than control one (Table, 4). Testosterone plays the major role in the development of reproductive organs and their functions (Hafez, 1987).

This positive effect of Flavomycin on semen characteristics of Friesian bulls at puberty was not obvious in case of buffalo bulls which could be due to species differences, good care and/or intensive selection in Friesian breed while little selection has been practiced with buffaloes. However, there were significant (P<0.05) differences in age, body weight and testes circumference at puberty in favouring of Flavomycin group (Table, 2). It was observed that 50 mg Falvomycin/head/day significantly (P<0.05) improved body weight and testicular size of both species and both parameters are very related to male reproductive tract and functions. Yassen and Mahmoud (1972) found a positive and significant relationship between body weight and testes size and production of semen. Also, Ahmed et al. (1984) reported a prepubertal increase in testicular growth rate in buffalo bulls but at considerably later stage of development (15-25 months) based on measurement of scrotal circumference as an index of testicular size. An increase in testicular weight during the later part of prepubertal development has also been described in Holstein bulls (Curtis and Amann, 1981) and has been related to corresponding peak in levels of growth hormone (Jeskimsen and Blom, 1976) and increased testosterone levels (Sundby and Velle, 1980).

Table 2. Some physical semen characteristics of Friesian and buffalo males at puberty as affected by dietary Flavomycin

Semen characteristics	Flavomycin level (mg/head/day)		
	0.0	30	50
		Friesian	
Volume (ml)	1.2±0.1[b]	1.6±0.1[a]	1.3±0.1[ab]
pH	6.8±0.1[a]	7.1±0.1[a]	7.2±0.1[a]
Concentration /ml ($x10^6$)	319±4.0[a]	419±4.0[a]	472±4.0[a]
Concentration/ejaculate ($x10^6$)	357±12.7[b]	924±12.7[a]	688±12.7[a]
Ejaculate motility (%)	21.7±3.9[b]	31.0±3.9[ab]	45.3±3.9[a]
Motile sperm/ml ($x10^6$)	74±2.7[b]	169±2.7[ab]	219±2.7[a]
Motile sperm/ejac. ($x10^6$)	83±7.1[b]	317±7.1[a]	436±7.1[a]
Age at puberty (day)	482±11.8[a]	457±15.7[a]	472±4.3[a]
Body weight at puberty (Kg)	210.4±7.9[b]	211.4±13.1[b]	260.6±7.3[a]
Testes circumference (Cm)	27.2±0.6[b]	28.4±1.0[ab]	30.0±0.9[a]
		Buffalo	
Volume (ml)	1.2±0.1[a]	1.1±0.1[ab]	0.9±0.1[ab]
pH	7.2±0.1[a]	7.1±0.1[a]	7.1±0.1[a]
Concentration/ml ($x10^6$)	271±1.1[a]	240±1.1[a]	232±1.1[a]
Concentration/ejaculate ($x10^6$)	323±1.6[a]	263±1.6[ab]	216±1.6[ab]
Ejaculate motility (%)	35.0±2.2[a]	24.8±2.2[b]	27.8±2.2[b]
Motile sperm/ml ($x10^6$)	106±0.9[a]	59±0.9[b]	63±0.9[b]
Motile sperm/ejaculate ($x10^6$)	120±1.0[a]	66±1.0[b]	59±1.0[b]
Age at puberty (day)	680±16.9[c]	644±23.1[ab]	627±16.4[a]
Body weight at puberty (Kg)	243.8±8.9[b]	293.0±7.7[a]	293.8±14.9[a]
Testes circumference (Cm)	20.0±0.7[c]	23.20±0.8[b]	27.2±1.3[a]

a,b means in the same row followed by the same letter are not significantly different (P>0.05).

In the present study, highly significant (P<0.01) positive correlation coefficients between body weight, testes circumference and testosterone levels were found in both Friesian and buffalo bulls (Table, 3). Many researchers also reported highly significant correlations in buffalo bulls among body weight, scrotal circumference, testicular weight and sperm concentration (Ahmed et al., 1984 and Heuer and Bajwa, 1986).

Table 3. Simple correlation coefficients between body weight, testes circumference and testosterone.

Item	Friesian bull	Buffalo bull
Testosterone level :		
Body weight	0.873 **	0.838 **
testes circum.	0.871**	0.793 **
Testes circumference :		
Body weight	0.935 **	0.872 **

** highly significant (P <0.01).

The effect of Flavomycin and age on testosterone level in the blood of Friesian and buffalo bulls are presented in Table (4). In Friesian, the addition of Flavomycin (30 and 50 mg/head/day) to the ration increased the testosterone level in blood by 13.5 and 16.7% over the control group, while in buffalo the values in Flavomycin treated groups were higher by 29.9 and 33.0% than that control, respectively. Such result may be attributed to the beneficial effects of Flavomycin on growth of the reproductive organs including testes as a result of stimulating growth rate. To the best of our knowledge, there is a lack of information dealing with testosterone hormone in cases of Flavomycin supplementation and the present study is one of the first studies in this respect.

Table 4. Testosterone 1evel (ng/ml) in blood of Friesian and buffalo males as affected by Flavomycin level and age

Factors	Friesian	Buffalo
Treatmants :	**	**
0 . 0 Flavo. Control	0.666 ± 0.02[b]	0. 144 ± 0.01[b]
30 mg Flavo .	0.756 ± 0.02[a]	0 189 ± 0.01[a]
50 mg Flavo .	0.777 ± 0.02[a]	0. 192 ± 0.01[a]
Age (month) :	**	
9	0. 309 ± 0.02[d]	0.077 ± 0. 01[d]
12	0. 594 ± 0.02[c]	0.092 ± 0. 01[d]
15	0. 678 ± 0.02[b]	0.144 ± 0. 01[c]
18	1. 349 ± 0.02[a]	0.250 ± 0. 01[b]
21	---	0.307 ± 0. 01[a]

a-d means in the same column under the same factor followed by the same letter are not significantly different (P>0.05) .

The obtained data revealed a gradual increase in testosterone concentration with advancing of age. The differences were significant (Table, 3). Such rise was due to the continuous development of the testes as a result of age progress toward attainment of puberty. Such effect is in agreement with that reported by several investigators (Rawlings et al., 1972; Locroix and Peletier, 1979; Miyamoto et al., 1989) in cattle and in buffalo (Kardjopranyoto et al., 1981; Mokhless and Ibrahim, 1990). They reported that there are increases in blood testosterone with advancing of age. The present data obtained in buffalo were within the ranges reported by Mokhless and Ibrahim (1990) in Egyptian buffalo.

The presence of Flavomycin as a growth promoter in the ration did not significantly affect the weights of most reproductive organs of both Friesian and buffalo bulls as shown in Table (5). In general, male buffalo reproductive organs weights reported in the present study were higher than those reported by Mokhless and Ibrahim (1990), but were comparable with those reported by Abdel-Rahman et al.(1982).

Table 5. Reproductive organs weight (g) and length (cm) of Friesian and Buffalo bulls at slaughter as affected by level of Flavomycin

	Flavomycin level (mg / day)		
Traits	0.0	30	50
		Friesian	
Testes weight	345.0 ± 5.5^{a}	395.0 ± 8.4^{a}	386.7 ± 10.4^{a}
Epididymis weight	44.0 ± 2.8^{b}	46.7 ± 2.7^{a}	41.5 ± 2.8^{b}
cauda weight	14.8 ± 1.2^{b}	15.7 ± 1.1^{a}	14.2 ± 1.2^{b}
corpus weight	8.3 ± 0.5^{a}	6.4 ± 0.5^{a}	6.8 ± 0.5^{a}
coput weight	20.5 ± 1.1^{a}	24.6 ± 1.1^{a}	20.6 ± 1.1^{a}
Accessory sex glands weight	93.9 ± 4.5^{a}	66.2 ± 7.0^{b}	88.6 ± 5.2^{ab}
cowper weight	9.1 ± 0.3^{ab}	8.1 ± 0.5^{b}	9.3 ± 0.4^{a}
ampulla weight	18.1 ± 0.8^{a}	15.5 ± 08^{a}	16.9 ± 0.8^{a}
seminal vesicle	66.7 ± 3.4^{a}	42.6 ± 1^{b}	62.4 ± 4.0^{a}
Penis weight	485.0 ± 15.4^{a}	$475.015.4^{a}$	360.0 ± 15.4^{a}
Penis length	86.3 ± 2.6^{a}	82.7 ± 3.8^{a}	86.3 ± 2.4^{a}
Testes circiumference	34.7± 1.0a	32.7±1.1a	33.0± 1.2a
		Buffalo	
Testes weight	158.5 ± 10.6^{a}	171.5 ± 6.0^{a}	171.4 ± 5.8^{a}
Epididymis weight	30.9 ± 2.4^{a}	29 ± 2.4^{a}	36.5 ± 1.8^{a}
cauda weight	9.6 ± 1.0^{ab}	8.3± 0.9b	12.3 ± 0.8^{a}
corpus weight	5.4 ± 0.5^{a}	6.1 ± 0.5^{a}	7.5 ± 0.5^{a}
caput weight	15.9 ± 0.9^{a}	15.5 ± 1.0^{a}	16.7 ± 0^{a}
Accessory sex glands weight	37.5 ± 3.1^{a}	40.6 ± 3.2^{a}	42.6 ± 2.1^{a}
cowper weight	6.9 ± 1.0^{a}	5.5 ± 1.2^{a}	10.4 ± 03^{a}
ampulla weight	$10.1\pm 0.^{a}$	9.0 ± 1.0^{a}	11.9 ± 03^{a}
seminal vesicl	20.5 ± 16^{ab}	26.1 ± 1.0^{a}	20.3 ± 1.5^{ab}
penis weight	245.0 ± 15.3^{ab}	266.7 ± 7.3^{ab}	302.5 ± 9.0^{a}
penis length	73.7 ± 1.3^{a}	73.3 ± 1.3^{a}	74.7 ± 1.3^{a}
testes circumference	26.0 ± 0.3^{a}	25.3 ± 0.3^{a}	25.0 ± 0.3^{a}

a.b means in the same row followed by the same letter are not significantly different ($P>0.05$).

Meanwhile, Friesian epididymal sperm reserves were significantly ($P<0.05$) increased by the presence of Flavomycin in the ration. Bulls raised on 50mg/head/day had higher epididymal sperm reserve ($15.8\pm 1.5\times10^{9}$) compared with $9.3+1.5\ \times10^{9}$ and $9.5+1.5\times10^{9}$ sperm for 30mg/head/day Flavomycin and control groups, respectively. Cauda epididymal sperm reserve and total epididymal sperm reserves reflect the productivity of testicular tissue of sperm cells, which is estimated as number of sperm cells per gram testicular tissue. Flavomycin treatment (50 mg) had a marked influence on this trait, is which Friesian bulls of this group had higher ($P<0.05$) sperm cell number per gram testicular tissue compared with 30 mg Flavomycin group and the control one. Therefore the higher level (50 mg/head/day) of Flavomycin improved the functions of the testes which were reflected in sperm production, as it is shown in Table (6), and in testosterone level as it is shown in Table (3). It has been reported that the total epididymal sperm reserve per bull was found to be 36.2 billion with relative distribution in caput, corpus and cauda epididymis as 5.42, 0.7 and 11.45 billion, respectively. The efficiency of sperm production averaged 14.5 x10^6 sperm per gram testicular parenchyma (Sharma and Gupta, 1979). In buffalo Flavomycin had no significant effect on epididymal sperm reserves and sperm production per gram of testicular tissue (Table, 6) which may be due to species differences in response to the levels of Flavomycin used in addition to the good care and/or intensive selection in Friesian breed while little or no selection has been practiced with buffaloes. Also, higher level than 50 mg of Flavomycin/head/day may be needed in case of buffalo to obtain the positive significant effect on semen production and quality.

Table 6. Epididymal sperm reserves of Friesian and buffalo bulls as affected by Flavomycin levels

Traits	Flavomycin levels (mg/day)		
	0.0	30	50
		Friesian	
Total epididymal sperm reserve (x10^9) :	9.3±1.5^b	9.3 ±1.5^b	15.8±1.5^a
cauda sperm (x10^9)	4.9±0.9^b	4.9±0.9^b	8.7±0.9^a
corpus sperm (x10^9)	2.7±0.4^a	1.0±0.4^b	2.8±0.4^a
caput sperm (x10^9)	1.9±0.5^b	3.5±04^{ab}	4.4±0.4^a
sperm cell / g (x10^6)	23.1±0.5^b	25.3±05^b	44.1±0.5^a
Body weight at slaughter (Kg) :	408.3±4.4^a	418.7±4.9^a	413.3±1.7^a
Age at slaughter (day) :	841.3±12.4^c	791.0±32.4^{ab}	754.0±66.2^a
		Buffalo	
Total epididymal sperm reserve (x10^9):	9.5±1.2^a	7.0±1.2^b	9.8±1.2^a
cauda sperm (x109)	4.9+0.6^a	4.2±0.6^a	5.9±0.6^a
corpus sperm (x109)	2.7±0.5^a	1.8±.5^a	2.1±0.5^a
caput sperm (x109)	1.9±0.3^a	1.0±03^a	1.8±0.3^a
sperm cell/g (x106)	62.7±0.9^a	50.4±0.9^{ab}	62.4±0.9^a
Body wt. at slaughter (kg):	407.3±4.9^a	402.3±3.9^a	409.7±7.5^a
Age at slaughter (day):	974.7±20.9^c	840.7±27.1^b	789.7±39.6^a

a,b: means in the same row followed by the same letters are not significantly different (P>0.05).

Therefore, it could be concluded that the presence of Flavomycin as a growth promoter in the ration post-weaning could improve the growth rate of the females and males of Friesian and buffalo and subsequently hasten the age of puberty by improving the development of the reproductive tract and consequently its performance.

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الصفات التناسلية لعجول وعجلات الجاموس والفريزيان وتأثيرها بالفلافومايسين كمنشط نمو

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استخدم ٦٠ حيوان منها ٣٠ جاموس (١٥ذكر ، ١٥ أنثى) و٣٠ فريزيان (١٥ذكر ، ١٥ انثى) لدراسة تأثير إضافة منشط النمو (الفلافومايسين) بثلاثة مستويات صفر ، ٣٠ ، ٥٠ مليجرام/للرأس/ اليوم مادة فعالة فى العليقة على الصفات التناسلية لعجول وعجلات الجاموس والفريزيان. بدأت إضافة الفلافومايسين بعد الفطام عند وزن حى مقداره ١٠٠ كجم واستمرت حتى الحمل بالنسبة للإناث ووزن ٤٠٠–٤٢٠ كجم بالنسبة للذكور. تم أخذ عينات دم للحصول على السيرم عند أعمار ١٨،١٥،١٢،٩ وكذلك ٢١ شهر بالنسبة للذكور. أظهرت النتائج أن إضافة الفلافومايسين أدت إلى تبكير البلوغ الجنسى (P<0.01) مقارنة بحيوانات الكونترول وترتب عليه التبكير فى الحمل وأول ولادة فى كلا من الجاموس والفريزيان. كان عدد مرات التلقيح اللازمة للاخصاب أقل فى المجموعة المضاف إليها الفلافومايسن عن مجموعة الكونترول. معظم صفات السائل المنوى لذكور الفريزيان عند البلوغ كانت أفضل (P<0.05) لمعاملات للفلافومايسين مقارنة بالكونترول. هذا التحسين فى صفات السائل المنوى كان مرتبطا بالتأثير الايجابى(P<0.05) للفلافومايسين على وزن الجسم – حجم الخصية وتركيز هرمون التستسترون. هذا التأثير كان أقل وضوحا فى حالة ذكور الجاموس. مخزون البربخ من الحيوانات المنوية تأثير ايجابيا (P<0.05) بإضافة الفلافومايسين. العجول الفريزيان المغذاه على ٥٠مجم فلافومايسين/للرأس/اليوم كان مخزون البربخ من الحيوانات المنوية بها وكذلك عدد الحيوانات المنوية بها وكذلك عدد الحيوانات المنوية لكل جرام من نسيج الخصية أعلى معنويا (P<0.05) من الكونترول وهذا التأثير لم يكن معنويا فى حالة الجاموس.