Comparison of the Effects of Three Different Diets on Growth Curves

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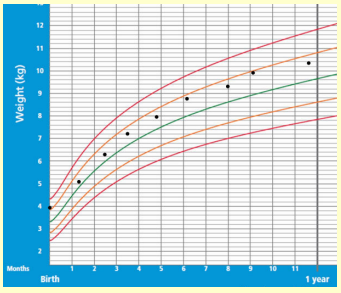
Karayaka sheep is a native breed of Turkey which is widely raised in the middle of Black Sea region. Slaughter lambs are in demand throughout the year because of high meat quality.
However, there is incomplete knowledge about the growth curve of this native breed.

Growth expresses the increase of organism's volume and mass resultant of interaction between genotype and environment. Growth curve models are useful tolls for interpreting the temporal conversions during growth.

Growth is one of the most important economic character for the livestock.



In this study growth curves of Karayaka lambs fed with three different diets were compared. Differences of diets depend on dietary zinc oxide (ZnO) which used as control group, 30mg/kg and 45mg/kg. All the other contents were same in diets.

In each groups 30 male lambs were included in the experiment from birth to day of 174.

Growth curves were estimated as a linear, quadratic and cubic forms. Model selection were based on the size of coefficient of determination (R^2) and residual sum of squares.

Model	Group	RSS	R^2
Linear	Control	1,852500	0,974750
	30 mg/kg ZnO	2,803625	0,969750
	45 mg/kg ZnO	2,120000	0,974250
Quadratic	Control	0,519750	0,993500
	30 mg/kg ZnO	0,500125	0,995125
	45 mg/kg ZnO	0,324750	0,996375
Cubic	Control	0,383125	0,995250
	30 mg/kg ZnO	0,349375	0,997125
	45 mg/kg ZnO	0,211875	0,997875

The best fitted model was obtained with cubic model with minimum residual sum of squares and maximum R^2. The estimated cubic models were;

for the control group

$Y=3.304+0.073*t+0.0011*t^2-0.000022*t^3$,

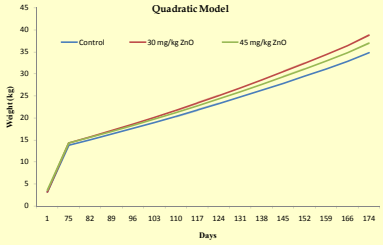
for the 30mg/kg ZnO group

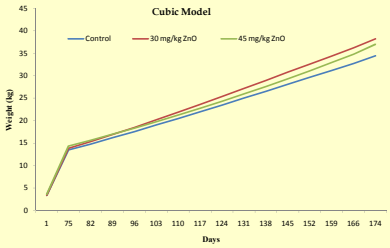
$Y=3.301+0.052*t+0.0014*t^2-0.000003*t^3$ and

for the 45mg/kg ZnO group

$Y=3.447+0.112*t+0.00035*t^2+0.000002*t^3$.

Graphs for quadratic and cubic models were given below.





Effects of the diets were not statistically significant on growth curves. Results mean that parameters of the models could be admitted as same. Superiority of cubic models, it may be result of rapid growth after weaning than pre-weaning.