

ABSTRACT

Study on association between productive and reproductive doe traits and some molecular markers in goats

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Aiming to find differences in some productive and reproductive traits that characterize goat breeds in Egypt and to find genetic markers which can be used to differentiate between them, blood samples were collected from a total of 76 adult does of different ages chosen from the goat herds of the Zaraibi and Damascus breeds according to their prolificacy (i.e. number of kids born per parturition per female). The relationship between these traits and the genetic markers was also considered. Does of each breed was divided into two groups representing the prolific and non-prolific females. Blood samples were examined for protein polymorphism using the SDS-PAGE technique, and also for the DNA polymorphism using the RAPD-PCR technique.

Analysis of variance and least squares means for the considered traits in the present study indicated that breed had significant effect on all studied traits except kidding interval and kilograms of kids weaned per dam. However, level of fecundity within each breed affected significantly only litter size and twinning rate as well as kilograms of kids kidded per dam. On the other hand, station showed highly significant effect ($P < 0.01$) on both age of dam at first kidding and twinning rate, however, level of fecundity within Zaraibi breed affected significantly litter size and twinning rate as well as kilograms of kids kidded per dam and kilograms of kids weaned per dam. Generally, Zaraibi females of El-Serw Station

showed earlier age at first kidding and higher twinning rate than those of Sakha Station.

The protein electrophoresis (SDS-PAGE) in the present work indicated that each goat population had a unique protein banding pattern. According to protein polymorphism data, Zaraibi and Damascus females had 11 different specific protein markers at molecular weights ranging from 28 to 179 KDa for Zaraibi breed, and from 42 to 162 KDa for Damascus breed.

The results showed also that the RAPD-PCR technique was able to separate precisely Zaraibi and Damascus individuals using some specific bands of different molecular weights produced by 10 selected primers. In general, primers A20, B08, C05 and C11 in Zaraibi breed and A20 and C08 in the Damascus breed gave the highest numbers of polymorphic bands. These primers could be used to characterize such breeds.

The associations between the blood protein banding patterns generated by the SDS-PAGE technique and the considered traits in the present study showed differences due to level of prolificacy within each breed and to farm location and suggested that marker assisted selection could be carried out at early ages for the improvement of reproductive and productive traits in Zaraibi and Damascus goats.

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