PARTIAL RESULTS REGARDING GOAT MILK CHARACTERISTICS IN MURCIANA GRANADINA BREED, AND MODALITIES TO IMPROVE MILK QUALITY

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Abstract

Improving of goat milk quality is the last trend in goat breeding. Productivity is allready at a high level so we must do the price difference only by the quality parameters. More than that, the market demand high quality products certified as „bio" or „organic". We analyze, in this case goat milk production, from qualitative point of view, in Murciana Granadina breed, exploited in Romania but imported from Spain. The breeder choice was explained by the fact that this goat breed have maybe the best qualitative paramethers in Spain, so it is possible to obtain high quality dairy products, solving a part of the market demands. Results show us a high conten of fats (5.28%), protein (2.98%) and lact. (4.41%). This paramethers give an important advantage in production of dairy specialties, and of course in increasing of economical value.

Key words: Murciana Granadina, milk, dairy, goat

INTRODUCTION

This study is just a part for an ample research regarding the modalities to improove goat milk quality by enriching it in polyunsaturated fatty acids. The milk quality became the first indicator from the economical point of view („Chifre cles 2017"). Dairy productivity is now at a high level, so the price of regular milk has decreasing. But the dairy products market demand high quality products, especially certified as „bio" or „organic". In this conjucture, the goat milk became a very important raw material for dairy industry, because of his suitability for obtaining high quality cheese production, and not only (Maathuis et al., 2017).
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MATERIALS AND METHODS

For realising the purposed objectives, biological material became from a farm from Contesti village, Dambovita County, owned by a romanian company. All the individuals from this farm belongs to Murciana Granadina breed and was imported from Spain (Vlad et al., 2017). We analyze 48 individuals divided in three groups, on three periods: A (10.11.2017-19.11.2017); B (20.11.2017-27.11.2017); C (28.11.2017-09.12.2017). Each group had a particular nutrition. The feeding ratio composition, at this moment, is confidential. We had a basic feeding ratio (based on hay and cereals), and an addition of 0.7 kg oleaginous feed such as sunflower groats, linseed and rapeseed. We analysed $\sum X$, $\overline{X}$, $\sum X^2$, $\sum x^2$, Cx, S^2 and Sx. Ranking of analysed characters was made using average performances (Figure 1).

RESULTS AND DISCUSSIONS

The best performance for group 1, for fat character was recorded in period A, being almost double compared to period B. Individuals of period C are characterized by an average of performances with only 0.856% extra compared to the lowest performance recorded in this batch (Table 1).

Regarding SNF (solid non fat), the average of performances, for analyzed individuals, is quite close, the greatest difference in performance averages being only 0.962%.

For density, after processing the results, it was observed that performance averages from periods B and C are quite close.

The lowest performance was recorded in period A, with 7.12% smaller compared to the average recorded in period B.

On the second place, in terms of performances for lactose, are individuals in period C with only 0.019% less compared to the individuals from period B.

On the last place, with a difference of 0.553% compared to the average of performances from the first position, is the group of individuals from period A.

Individuals from group 3 perform an average performance of protein at 0.327% in addition to the average of performances recorded by individuals in the period A.

Average performance of protein in period A occupies the last place, respectively 0.389% compared to the group of individuals who occupy the best position for analyzed character.

The average performances for analyzed characters, in these three periods, for group 2 are presented in Table 2. The average performances recorded in this three periods, for fat, are very close, between the best and the worst performing being a difference of only 0.805%. Analyzing the data presented in Table 2, it can be noticed that the individuals of period C are noted by the highest average of performances. Thus, they have a bigger value, with 0.567% higher than the average performance of individuals from group 1, and with only 0.054% higher than the individuals analyzed in period B. Analyzing the average performances obtained for the three study periods, it can be observed that the highest density was determined by the group of individuals in the period C. The second place is occupied by the group from period B, with only 0.282% less than the average performances from period C.

From the data presented in Table 2, it can be observed that, for the lactose character, the differences between the average performances for these three groups of individuals are very small, up to 0.314%.

Table 1. Average performances (%) for group 1

	Period	Fat $\overline{X} \pm S\overline{X}$	SNF $\overline{X} \pm S\overline{X}$	Density (g/cm³) $\overline{X} \pm S\overline{X}$	Lactose $\overline{X} \pm S\overline{X}$	Salts $\overline{X} \pm S\overline{X}$	Protein $\overline{X} \pm S\overline{X}$
A	10-19.11.2017	7.88±0.375	7.826±0.154	23.999±0.746	4.297±0.084	0.633±0.013	2.835±0.057
B	20-27.11.2017	3.927±0.278	8.820±0.148	31.119±0.743	4.850±0.081	0.723±0.012	3.224±0.055
C	28.11.-09.12.2017	4.783±0.418	8.788±0.133	30.29±0.660	4.831±0.074	0.717±0.011	3.207±0.049

Table 2. Average performances (%) for group 2

	Period	Fat $\overline{X} \pm S\overline{X}$	SNF $\overline{X} \pm S\overline{X}$	Density (g/cm³) $\overline{X} \pm S\overline{X}$	Lactose $\overline{X} \pm S\overline{X}$	Salts $\overline{X} \pm S\overline{X}$	Protein $\overline{X} \pm S\overline{X}$
A	10-19.11.2017	6.765±0.409	8.163±0.096	26.227±0.626	4.482±0.053	0.663±0.008	2.963±0.037
B	20-27.11.2017	6.048±0.596	8.676±0.094	28.815±0.681	4.766±0.052	0.709±0.008	3.157±0.035
C	28.11.-09.12.2017	5.960±0.465	8.730±0.124	29.097±0.644	4.796±0.068	0.712±0.010	3.179±0.046

Table 3. Average performances (%) for group 3

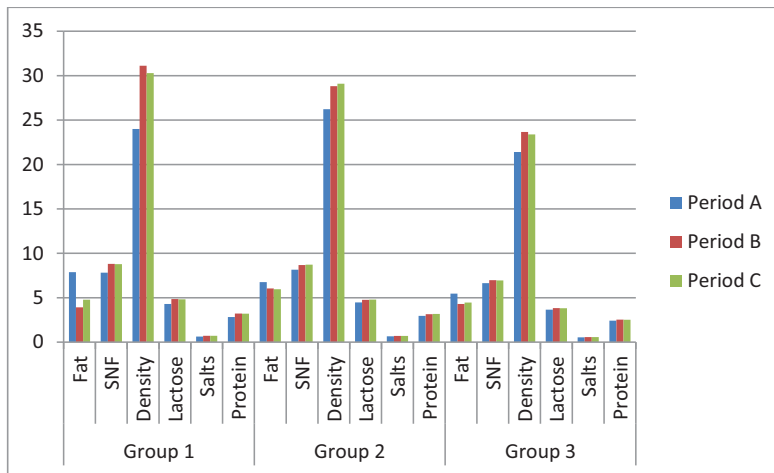|	Period	Fat $\overline{X} \pm S\overline{X}$	SNF $\overline{X} \pm S\overline{X}$	Density (g/cm³) $\overline{X} \pm S\overline{X}$	Lactose $\overline{X} \pm S\overline{X}$	Salts $\overline{X} \pm S\overline{X}$	Protein $\overline{X} \pm S\overline{X}$
A	10-19.11.2017	5.458±1.299	6.650±1.367	21.410±4.319	3.653±0.750	0.540±0.110	2.416±0.496
B	20-27.11.2017	4.300±1.160	6.983±1.473	23.657±4.891	3.837±0.809	0.572±0.120	2.545±0.535
C	28.11.-09.12.2017	4.465±1.143	6.949±1.457	23.391±4.856	3.820±0.800	0.567±0.118	2.531±0.530

Figure 1. Graphical representation of average performances (%)

The situation is similar for protein. Thus, from the data presented in Table 2, we can see that, during the period C has recorded the best average performance for analyzed character, with a plus of 0.216%, compared to the average performance from period A. Between the average performance established in the periods B and C, the difference is very small, at only 0.022%. If we analyze simultaneously all the six characters, we can conclude that the best performances are achieved during the period C. In Table 3 are presented the average performances for group 3, for all six analyzed characters in all three periods. From the data presented in Table 3, it can be seen that for the fat character, the best performance is recorded in period A, with a plus of 1.158%, compared to the determined performance for the individuals analyzed in the period B. Compared with the average of the performances established for the period C there is a difference of only 0.993%.

CONCLUSIONS

The differences between performances for SNF do not exceed 0.333%. An average performance with a plus at only 0.034%, was determined during period B, in comparation with the average performance for individuals analyzed during C period. For density, the data processing indicated that between averages calculated in periods B and C there is a difference of only 0,266%. Even the comparison with the average performances determined for the other group shows that the averages calculated for this character are very close. The situation is similar if we compare the other three elements: lactose, salts and protein. For lactose, the difference between the highest and lowest averages was only 0.184%, 0.032% for salts and 0.129% for protein. For any of the items presented, the lowest average performance was determined in period A (start period) and the best performance in period B. Another very important and obvious fact is that the increasing of protein levels is associated with the decreasing of fat levels in milk. Even if the datas regarding the feeding ratio composition of feed ratios are confidential, at this time, we must say that the results from B are caused by the feeding from A period with a singular exception: fat. The differences between B and C period are smaller in comparat because the feeding has remain the same (from quantitative point of view).

REFERENCES

Maathuis Annet et al., 2017. Protein digestion and quality of goat and cow milk infant formula and human milk under simulated infant codition. Journal

of Pediatric Gastroenterology and nutrition, 65(6), 661-666.

Vlad I, Maftei M, Cărătuş Stanciu M, Pogurschi E., 2017. Study on Murciana Granadina goats phenotype remarks on productive performances in Agri-Valahia farm from Conteşti Dîmbovita County, Romania. Scientific Papers Series Management, Economic Engineering in Agriculture and Rural Development, 17(4), ISSN 2285-3952 .

„Chifre cles 2017". Institut de L`elevages „Production caprine - Lait et Viande – Confederation Nationale de l`elevage" C.N.E.