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Conference paper

PRODUCTION AND COMPOSITION OF SHEEP AND GOAT MILK IN SLOVENIA

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Summary

Milk production of small ruminants has been increasing in Slovenia as well as in the world. Composition and quality of milk are very important, being it a raw material for production of the best quality products. Factors that most frequently affect the composition and quality of sheep and goat milk are presented. The contents of fat, proteins, lactose in milk produced by Slovene sheep and goats as well as somatic cell count in samples of sheep milk are outlined.

Key words: small ruminants, milk production, milk, composition, somatic cell count, Slovenia

Introduction

Milk production of small ruminants has been increasing all over the world although at a lower rate than production of cow milk. World production of small ruminant milk amounts to 19.2 billion tons, which means only 3.7% of all world milk production. In EU, milk produced by small ruminants represents 1.7% of all produced milk but production is increasing. In spite of augmented production, small ruminant milk and milk product are in great demand. Most of sheep milk is produced in Mediterranean countries (Table 1). Data show that production has been increasing for the last few years. The most of goat milk is produced in India and Bangladesh, but in Europe the leading countries are Spain, Greece and France.

Production and composition of sheep milk in Slovenia

About 5000 sheep for milk production are bred in Slovenia. In the national selection programme for milk-meat production the following breeds are

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included: Bovška and Istrska sheep that are native breeds and part of their flocks are sired by East Friesian milk breed. Milk production and milk composition are recorded for 1500 breeding sheep bred by more than 50 breeders.

Table 1. - SHEEP MILK PRODUCTION IN SOME COUNTRIES IN THE PERIOD BETWEEN 1986 AND 1997

Country	1986	1991	1993	1997
Spain	251	315	313	353
France	168	197	206	230
Greese	630	630	634	651
Italy	615	590	568	596
Portugal	87	93	98	111
Turkey	-	1040	992	1052
Algeria	-	219	220	224

Milk production of the milk recorded flocks amounts to 210 kg in lactation that lasts 187 days on average. Breeds differ in milk production and milk composition. It is calculated that about 450 t of sheep milk is produced in Slovenia. Most of it is processed in family cheese-dairies and only small amounts in the mountain and common cheese-dairies.

Table 2. - MILK PRODUCTION OF SLOVENE SHEEP IN 1997

Breed	Milk production, kg	Fat, %	Protein, %	Dry matter, %	Lactation, day
Bovška	219	6.1	4.4	15.6	178
Bovška-sired	231	6.0	4.6	15.6	218
Istrska pramenka	138	7.4	4.1	17.0	185

Goat milk production and composition of goat milk in Slovenia

Goat milk is produced by two breeds, Saanen and Alpine, that are included into the national breeding programme. Domestic white goats and Balkan white goats are sired by Saanen while other breeds are sired by Alpine. Siring has been in use for ten years.

Table 3. - MILK PROTUCTION OF SLOVENIA BREED GOATS IN 1997

Breed	Milk production, kg	Fat, %	Protein, %	Dry matter, %	Lactation, day
Saanen	584	3.3	4.2	10.5	275
Alpine	493	3.3	4.3	10.3	258

It is estimated that about 8000 t of goat milk and about 500 t of sheep milk are produced in Slovenia. Sheep milk is used for cheese and curds by breeders themselves. About 20% of goat milk is purchased by dairies and smaller cheese dairies, about 20% are sold at family farms and the rest is used or processed at home.

Factors that significantly affect quality of milk

The following factors significantly affect the quality of milk:
- management of animals
- health conditions
- content of bacteria in milk
- somatic cell count
- residues and sediments in milk.

Such a high quality product, which sheep milk and goat milk is, can only be produced by adequate management, care and nutrition as well as health conditions of animals. Besides genetic and physiological factors, quality and composition of milk are affected by environment, nutrition, season, climatic conditions, type of management and milking. All jobs are equally important: quality of produced fodder, fresh and irreproachable drinking water as well as milking conditions. Most of milk produced by small ruminants is reproduced therefore it is important that milk is used for products of the best quality.

Management of animals is important at milking. Personal hygiene is essential. Hands and dresses should be clean to achieve the best quality of milk. Animals under stress have milk excretion changed. To prevent stress situation, animals should be monitored so that their reactions are known. Any quick and not expected change can disturb animals and diminish daily milk production by 20%. Time of milking is very important. Milking should befall at the same hour every day. All preparations for milking should be equal every day to stimulate animals for milking. Taking it into account stress and consequently decreased milk production udder diseases and mastitis could be prevented.

Health conditions affect milk production significantly too. Healthy animals are less prone to stress situations. High productive animals require very special care and management to maintain physiological and metabolic balance and production ability. Highly productive animals respond to mistakes more clearly and consequences are more apparent than in animals with lower production.

Somatic cell count significantly determines milk quality. Somatic cell count has been used in small part of sheep flocks in Slovenia for a year. The first results showed that somatic cell count varied a lot (Table 4).

Table 4. - SOMATIC CELL COUNT IN SHEEP MILK IN 1998 IN SLOVENIA

Somatic cell count (000)	Samples (n)	Average (000)	Percentage (%)
1-100	1281	51	45.7
100-200	461	143	16.4
200-300	179	248	6.4
300-400	123	349	4.4
400-500	93	456	3.3
500-600	65	559	2.3
600-700	57	643	2.0
700-800	52	759	1.9
800-900	32	841	1.1
900-1000	32	955	1.1
0ver 1000	431	3526	15.4

Somatic cell counted between 1000 and 59000,000. More than 15% of samples contained more than 1 million of somatic cells, while 24% of samples contained more than 500000 SC and 32% of samples more than 300000 SC. Standards for sheep milk in the USA administer 300000 SC so that 32% of our milk do not respond to above criteria.

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PROIZVODNJA I SASTAV MLIJEKA OVACA I KOZA U SLOVENIJI

Sažetak

Proizvodnja mlijeka preživača raste u Sloveniji kao i sastav i kakvoća mlijeka, vrlo važne sirovine za proizvodnju najbolje kakvoće. Prikazani su čimbenici što najčešće djeluju na sastav ovčjeg i kozjeg mlijeka. U glavnim su crtama izneseni sadržaj masnoće, bjelančevina i laktoze u mlijeku slovenskih ovaca i koza kao i broj somatskih stanica u uzorcima ovčjeg i kozjeg mlijeka.

Ključne riječi: mali preživači, proizvodnja mlijeka, mlijeko, sastav, broj somatskih stanica, Slovenija

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