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MONITORING NUTRITIONAL STATUS OF THE GOATS IN ORGANIC PRODUCTION

Z. Antunović[1], M. Šperanda[1], Đ. Senčić[1], M. Domaćinović[1], Z. Steiner[1], B. Liker[2], V. Šerić[3]*
[1]Faculty of Agriculture, Trg sv. Trojstva 3, 31000 Osijek, Croatia, [2]Faculty of Agriculture, Svetošimunska 25, 10000 Zagreb, [3]Clinical Hospital, 31000 Osijek, Croatia

SUMMARY

Analyses of body condition scores (BSC), milk measured and metabolic profile (MP) were made on 30 French alpine goats on the organic production during early lactation period (in the first 30 days). Goats were fed on the cereals mixture (wheat, rye, corn and wheat bran) and meadow hay. Milk yield was measured at evening and morning milking before blood collection. Blood samples were collected from the jugular vein. BSC was assessed according to Santucci and Maestrini (1985). Average daily milk yield of goat was 2.5 l/day. BSC values were 2.7 (from 2.2 to 3.5). The average blood glucose level (3.17 mmol.l-1) and milk lactose level (4.47%) in the goats confirmed sufficient energy supply, but plasma urea level (2.76 mmol.l-1) and milk urea level (10.97 mg.dl-1) showed lower protein delivery. Mineral concentrations (Na, K, Cl, Ca) and anion gap in the goats blood showed adequate mineral supply. Acid-base status values (pH, pO2, pCO2, HCO3-) ranged within physiological limits for dairy goats. Results refered on low protein ration composition during early lactation period in organic goats production. BSC, MP and milk composition can be useful parameters for evaluation nutritive and health status of dairy goats.
Key words: goats, organic production, body condition score, milk, metabolic profile, blood

INTRODUCTION

According to biological performances, goats are ideal animals for organic production. The aim of organic cattle breeding is getting high quality products for people, as well as animal welfare and environment protection (Senčić i Antunović, 2003). Succes of goats production depends on many genetic and paragenetic parameters. Nutrition and feeding have leading possition. For determination nutritional and health status it is used body condition score (Cabbidu et al., 1999; Pamba-Golah et al., 2000), quantity and quality of milk (Greppi et al., 1995 and Khaled et al., 1999), as well as metabolic profile (Herdt, 2000.; Antunović et al., 2002; Antunović et al., 2006). There is no many scientific and professional papers about organic goats production, above all which investigates nutritional status of the goats.The aim of this paper is find out utility of body condition scores, metabolic profile, quality and quantity of goat products-milk, for determination of goats nutritional status on the organic production.

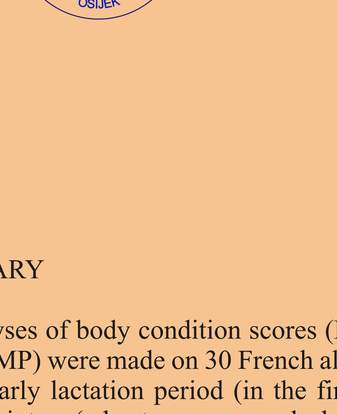
MATERIALS AND METHODS

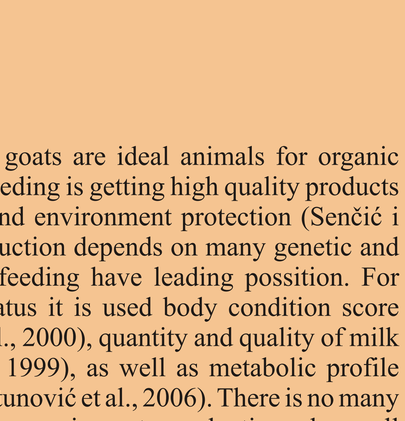
Analyses of body condition scores (BSC), milk measured and metabolic profile (MP) were made on 30 French alpine goats on the organic production during early lactation period (in the first 30 days).

Goats were from 4 to 6 years in average, from 4th to 5th lactation and they were kept on organic manner (Regulation on organic production of animal products, NN 13/02). Goats were fed on the cereals mixture (wheat, rye, corn and wheat bran), 1 kg/per day with addition of salt licks and meadow hay ad libitum.

Milk yield was measured at evening and morning milking, before blood collection. Chemical analysis of milk was done by infrared spectrometric method HR ISO 9622:2001, determination of fat, proteins and lactosis by ISO 9622:1999. Urea milk content was done by color spectrophotometic method. The blood was collected from the jugular vein (10ml) into the sterile vacuum tubes Venoject® (Sterile Terumo Europe, Leuven, Belgium). After that, the serum was separated by centrifugation (10 min) at 3000 revolutions/min and placed into the Olympus AU640. Within the blood plasma there have been found the concentrations of the mineral indicators (calcium, potassium, sodium, magnesium, chloride and iron), concentrations of the biochemical indicators (urea, glucose, total proteins, albumin, cholesterol and bilirubin total) and hematological indicators (hemoglobin and hematokrit). Acid-base balance (pH, pO2 –partial pressure of oxygen; pCO2-partial pressure of carbon dioxid, HCO3- -bikarbonat ions) determined on blood plasma on the Radiometer ABL500. Anion gap was determined according to formula Na + K – (Cl + HCO3-) after Kaneko et al. (1997).

Body condition score was assessed according to Santucci and Maestrini (1985). Statistical analysis of data was performed by computer program STATISTICA (StatSoft, Inc.).





RESULTS

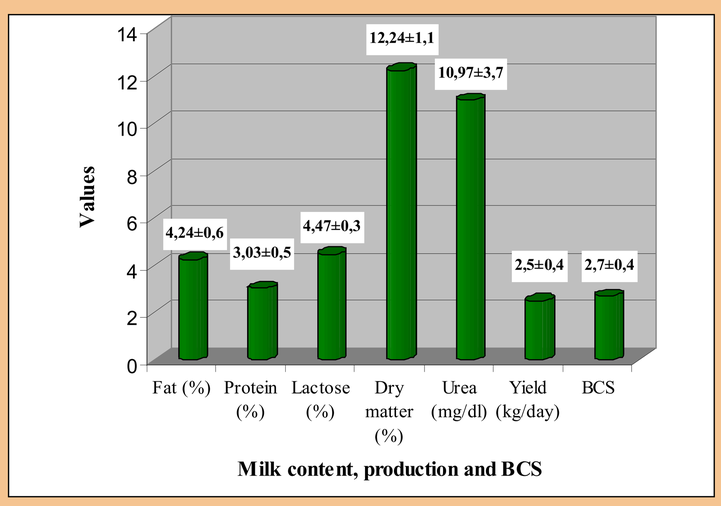


Figure1. Goat milk content, milk yield and the body condition score and related standard deviations

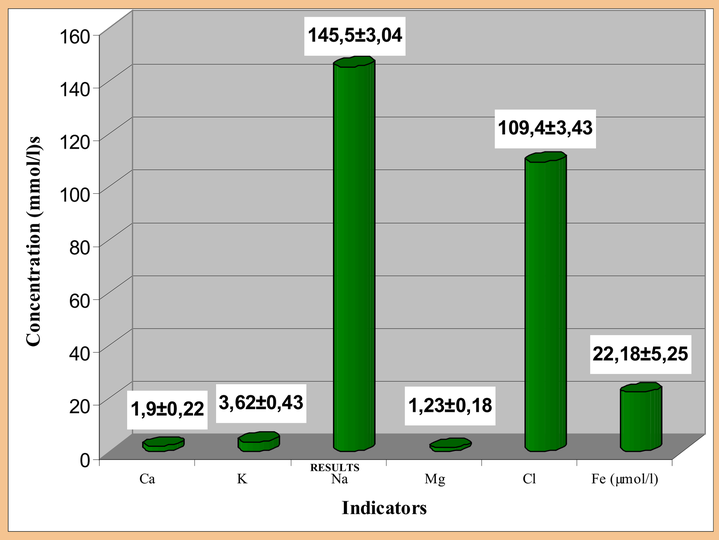


Figure 2. Minerals concentration in goat plasma during first month lactation in organic production

Figure 3. Biochemical indicators in goat plasma during first month lactation in organic production

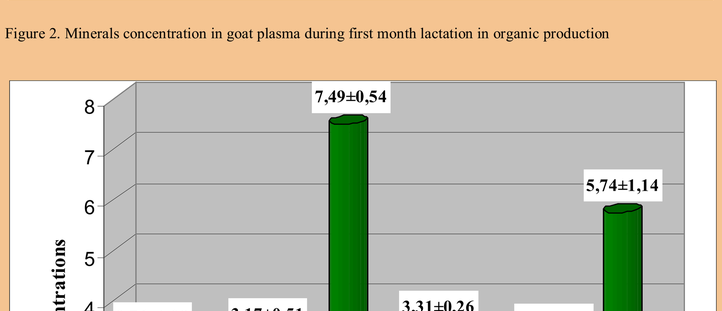


Figure 4. Acid-base status and anion gap in goat plasma during first month lactation in organic production

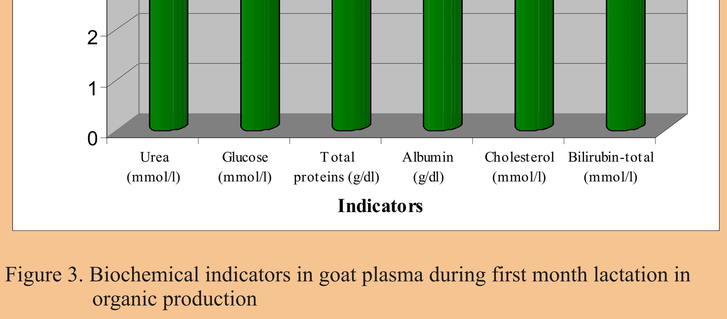
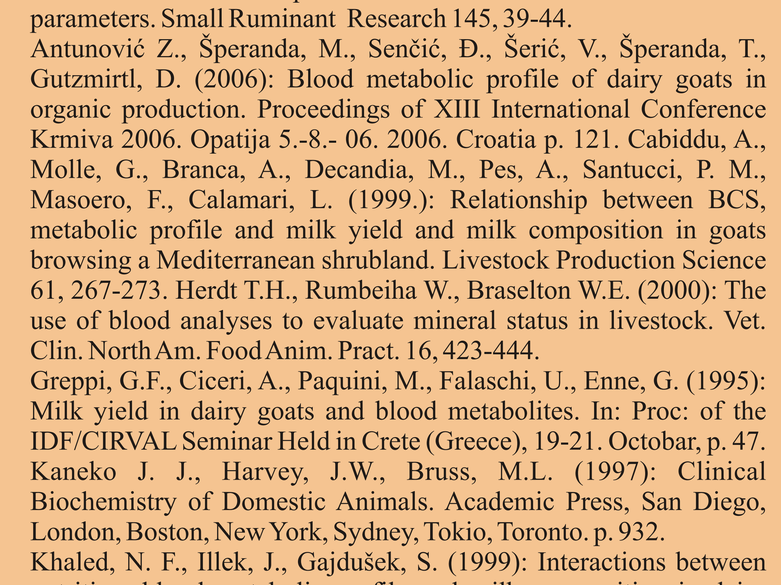


Figure 5. Hematological indicators in goat plasma during first month lactation in organic production



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