Journal of Animal and Veterinary Advances 16 (1): 20-23, 2017
ISSN: 1680-5593

The Performance of the Production and the Quality of Goat Milk of Ettawa Hybrid [*Capra aegagrus hircus* (Linnaeus, 1758)] Used with of Various Kinds of Tropical Feed Materials

[1]Sujono, [1]Asmah Hidayati and [2]Juris Burlakovs
[1]University of Muhammdiyah Malang, Jl. Raya Tlogomas 264, 65144 Malang, East Java, Indonesia
[2]Department of Biology and Environmental Science, Faculty of Health and Life Sciences,
Linnaeus University, SE-391 82 Kalmar, Sweden, European Union

Abstract: Production and quality of goat milk is influenced by factors of feed, especially feed concentrate and forage. Feed ingredients given in the tropics is very varied kind as utilizing various kinds of agricultural waste. The purpose of this study was to get a wide range of complete feed formula cheap and quality for goat's milk of Ettawa hybrid [*Capra aegagrus hircus* (Linnaeus)] to view goat milk production and quality. The results showed that five types of complete feed formula of various types of feed ingredients which are found in tropical regions and result in the production and quality of milk (levels of protein and fat mlik) that not significant. The all feed formula can be used in dairy goat's milk of Ettawa hybrid types in the tropics. The use of feed formula ready to consider the price and availability of feed ingredients.

Key words: Complete feeds, Ettawa goat [*Capra aegagrus hircus* (Linnaeus)], Feed ingredients tropical, goat's feed, production and the quality of goat milk, feed, ingredients

INTRODUCTION

Measurement production and quality of goat milk is influenced by factors of feed, especially feed concentrate and forage. Constraints feeding goats in the tropics are: provision of forage that is not continuous and only rely on forage crops browsing. It is necessary for feeding the milk goats are in accordance with the needs of livestock and guaranteed availability throughout the year with a complete feed made formula.

Some feed ingredients in the tropics are often found is waste of kale [*Ipomoea aquatica* (Forsk)], pollard, bran, grits, tofu, soy pulp, palm oil cake (Sujono, 2013). Feedstuffs have been as animal feed because it is cheap, easily available and do not compete with human needs. It is necessary to study the use of various feedstuffs tropical regions with different formulas complete feed.

MATERIALS AND METHODS

Experimental: Materials research using hybrid goat lactation Ettawa [*Capra aegagrus hircus*] age 2 years, weight between 30-35 kg. The experimental design with the design one way factor with five treatments with each treatment required two goats. Treatment accorded consists of five different types of the feed concentrate, namely:

- P1 = Feed the concentrate: pulp, wheat pollard and waste of kale (40:10:50)
- P2 = Feed the concentrate: soybean dregs, polar and waste of Kale (40:10:50)
- P3 = Feed the concentrate: copra meal, rice bran, wheat pollard and waste of kale (10:20:20:50)
- P4 = Feed the concentrate: pollard, waste of kale, bran and corn slamper (10:50:20:20)
- P5 = Feed the concentrate: grits, wheat pollard and waste of kale (40:10:50)

Each feed treatment adjustment period for 1 weak and the collection of data for 5 days. Average feed consumption, production and quality of milk collected from each goat and every treatment for any period of time experiment. Analysis of difference in treatment using ANOVA and if there are differences in different test followed by Duncan's test. Observed variables is the production and quality of milk (fat, protein, TS and SNF).

RESULTS AND DISCUSSION

Quality of the feed treatment: The content of the nutritional value of each food fast food served in Table 1 value nutrition of complete feed with a basis of dry kale

Corresponding Author: Sujono, University of Muhammdiyah Malang, Jl. Raya Tlogomas 264, Malang 65144, East Java, Indonesia

Table 1: Nutrient content of feed treatment (%)

Perlakuan	Dry matter	Organic material	Ash	Protein	Crue fiber	Lipid	BETN	TDN
P1	72.33	88.67	11.33	12.83	17.57	6.85	36.58	75.57
P2	74.15	89.41	10.59	11.82	16.18	5.37	42.02	78.53
P3	88.90	88.23	11.77	12.16	14.05	7.04	56.04	95.04
P4	89.65	86.01	13.99	12.06	17.75	5.83	52.09	90.78
P5	88.67	91.59	8.410	11.31	12.79	6.92	60.55	96.21

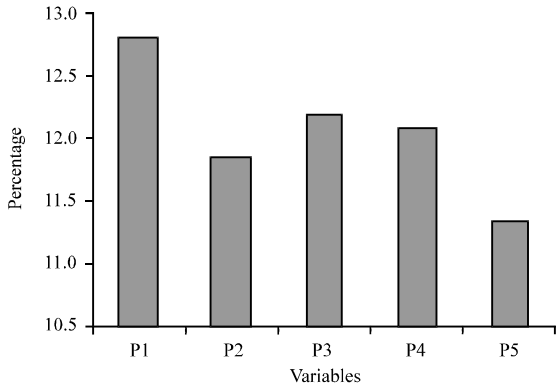

Fig. 1: Quality of the feed treatment

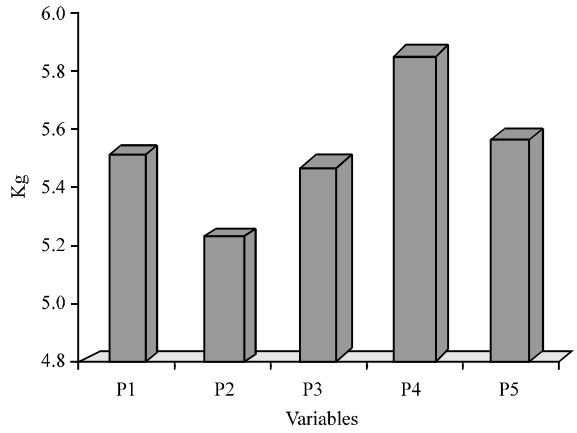

Fig. 2: Effect of the treatment of Ettawa hybrid feed consumption

waste of five kinds of treatments with the highest protein content of 12.83% P1, P3, followed by 12.16%, 12.06% P4, P2 11.82% and the lowest P5 11.31%. Protein content of the feed formula is still low at under 10% as the basic (Fig. 1-2).

Effect of the treatment of animal feed consumption: The results of research into the use of various types of feed formula ready to feed consumption by averaging the highest feed intake of 5.83 kg treatment P4, P5 followed by 5.56 and 5.51 kg of P1, P3 of 5.47 kg and the lowest amounting P2 5.23 kg. The statistical analysis results with ANOVA is not different. This is presumably

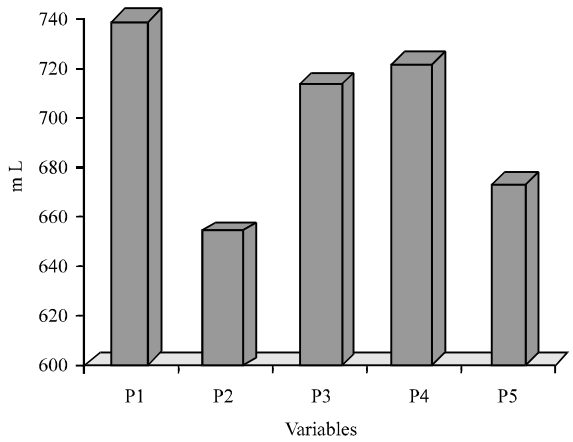

Fig. 3: Effect of the treatment of goat milk production Ettawa hybrid

due to the nutritional value of feed, the type of goat and same of environmental conditions. Clarified by Soetarno (2003) that factor affecting feed in take among nations, age ambient temperature and nutrient content of energy, especially cattle feed.

Effect of the treatment of goat milk production Ettawa hybrid: The results of research into the use of various types of ready to feed formula milk production of dairy goats is the average of the highest daily milk production P1 treatment of 738.75 mL, followed by 722.75 mL P4, P3 amounted to 711.63 mL, P5 amounted to 672.50 mL and P2 lows of 653.88 mL. The statistical analysis results with Anova no different. This is presumably because the feed intake did not differ between treatments. The average milk yield almost the same results of this study with the results of research (Sujono, 2013) in goat breeders in Batu (Malang-East Java) ranging from 630-2 121.71 mL (Fig. 3).

Effect of the treatment of goat milk protein of Etawa Hybrid: In descriptive based on the results of the research shows that the highest protein content of goat milk treatment P1 by 4.49%, followed by P2, P4 and P5 equal protein levels of 4.45% and the lowest at 4.08% P3. The statistical analysis results with Anova is not different (Fig. 4).

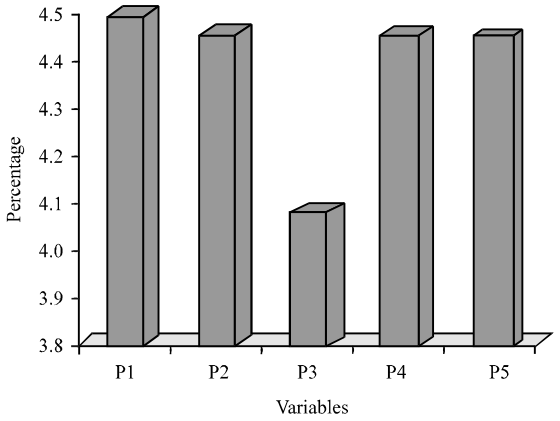

Fig. 4: Effect of the treatment of goat milk protein of Ettawa hybrid

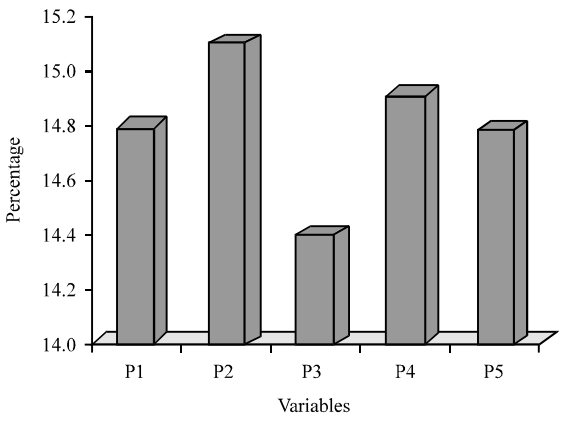

Fig. 6: Effect of the treatment of goat milk solid total Ettawa hybrid

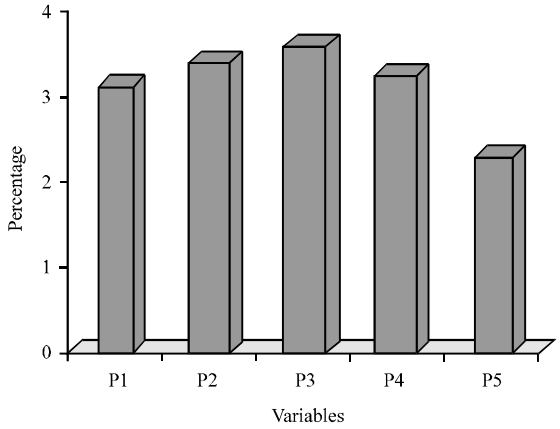

Fig. 5: Effect of the treatment of goat milk fat content Ettawa hybrid

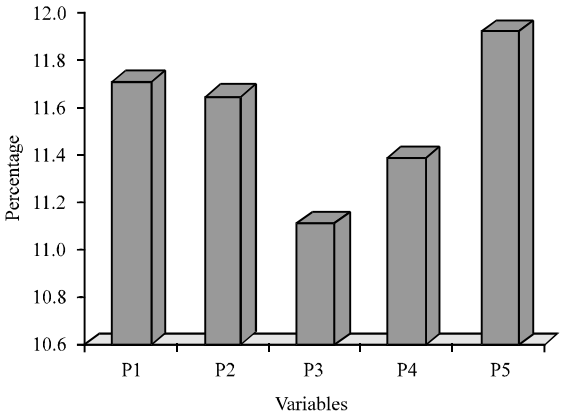

Fig. 7: Effect of the treatment of non-fat solid (SNF) goat Ettawa hybrid

Effect of the treatment of goat milk fat content Ettawa hybrid: In descriptive research shows that the highest fat content of goat milk P2 treatment by 3.58%, followed by 3.58% P3, P4 of 3.25%, 3.14% P1 and P5 lowest at 2.89%. The statistical analysis results with Anova is not different (Fig. 5).

Effect of the treatment of goat milk solid total Ettawa hybrid: The level of Total Solid (TS) highest goat milk treatment by 15.11% P2, P4, followed by 14.91%, amounting to 14.80% P1, P5 14.78% and the lowest was P3 14.40%. The statistical analysis results with Anova is not different (Fig. 6)

Effect of the treatment of non-fat solid (SNF) goat milk Ettawa hybrid: In descriptive seen that the levels of Solid Non Fat (SNF) highest goat milk P5 treatment of 11.91%, followed by P1 by 11.70%, amounting to 11.63% P2, P4 at 11.38% and the lowest P3 by 11.10%. The statistical analysis results with Anova is not different (Fig. 7).

Milk quality research (protein content, fat, Total Solid and Solid Non Fat) by administering five types of fast food is no different. This is possible because the feed given to the same relative nutritional value. The second factor is the same type of goat is Ettawa hybrid. Clarified by Anggraeni (1999) add the milk of cows capable of producing results of genetic, environmental and interaction both are interrelated. Among the environmental factors, the ration has the most impact which is about 60% (Kuswandi, 2011).

Material used is complete feed waste of kale dry nutrient levels are also low in protein content of 6.32%, 38.01% crude fiber, fat 4.59%, BETN 28.51%, 72.23% TDN and materials organic 87.8% (Aris and Sujono, 2014). Average feed P1 consumption of 5.51 kg day^{-1};

P2 7.2 kg day^{-1}; P3 5.47 kg day^{-1}; P4 5.83 kg day^{-1} and P5 5.56 kg day^{-1}. Average milk production per day P1 738.75 mL; P2 593.88 mL; P3 711.75 mL; P4 722.75 mL and P5 672.50 mL. The analysis of statistic showing that feed consumption and production milk not different. It this is because of five types of feed eligible bachelor who have given the nutrients that same relative. Nutritional value of each instant fodder is the Treatment of feed P1 with protein 6%, ekstract fiber 17.57%, fat 6.85%, BETN 36.58%, ash 11.33%, ME 1 517.8 kcal and TDN 75.56%. Treatment of feed P2 protein content 8.26%, ekstract fiber 16.18%, fat 5.37%, BETN 42.02%, ash 10.59%, ME 1 692.5 kcal and TDN 78.53%. Treatment feed of P3 with protein 9.11%, coarse fiber 14.05%, fat rough 7.04%, BETN 56.04% as h 11.77%, ME 2 432.4 kcal and TDN 95.04%. Treatment feed P4 protein content 7.83%, ekstract fiber 17.75%, fat 5.83%, BETN 52.09%, ash 13.99%, ME 2 126.3 kcal and TDN 90.78%. Treatment P5 with protein content 7.31%, ekstract fiber 12.79%, fat 6.92%, BETN 60.55%, ash 8.41%, ME 2 544.2 kcal and TDN 96.21%. This is explained by Devendra (1980). that the consumption of feed and goat milk production is highly influenced by nutritional content of nutrition.

Milk production of research results to range between 593.88-738.75 mL·head·d. The results of research has delivered by Tambrin (2011) that milk production local goat ranges 0.1-2.2 L·head ·d while milk production local goat sub-tropics can reach 5-6 L·head·d. Average levels of a protein P1 milk of 4.49%, P2 of 4.45%, P3 of 4.08%, P4 of 4.45% and P5 of 4.45%. Concentration fat of milk goat the results of research P1 of 3.14%, P2 of 3.58%, P3 of 3.37%, P4 of 3.25% and P5 of 2.89%. The results of the analysis also the quality of milk is no different among five treatment. This is because of a feed given the same relative is derived from tropical areas with the quality of that same relative. Was supported by Devendra (1980) that the factors that can affect the quality of milk of them are of lactation, month's phase of lactation and breed and the quality of feed.

CONCLUSION

The use of various types of feed formula ready-made from waste of kale no effect on feed intake, milk production and quality of goat Ettawa hybrid. In descriptive highest milk production resulting from the treatment P1 = feed the concentrate: pulp, wheat pollard and waste of kale (40:10:50).

ACKNOWLEDGEMENT

Thanks to the Ministry of Research and Higher Education through the Directorate of research and community service that has provided research funding supporting.

REFERENCES

Anggraeni, A., 1999. [Performance of dairy cow milk production: Study on internal environmental factors (In Indonesian)]. Wartazoa, 9: 41-49.

Aris, W. and Sujono, 2014. [Dairy goats agribusiness development towards a healthy of community Indonesia with the partnership model based on business ethics as an effort to strengthen food security]. Master Thesis, Muhammadiyah University of Malang, Malang, Indonesia. (In Indonesian)

Devendra, C., 1980. Milk production in goats compared to buffalo and cattle in humid tropics. J. Dairy Sci., 63: 1753-1767.

Kuswandi, 2011. Local feed utilization technology to support increased production ruminant animal research and development center. J. Anim. Res. Dev. Center, 3: 189-204.

Soetarno, T., 2003. [Aquaculture Management Dairy Milk]. Gadjah Mada University, Yogyakarta, Indonesia, (In Indonesian).

Sujono, 2013. [Production and quality of milk hybrid Ettawa with different feed formula concentrate in goat breeding business Ettawa of Batu Dictrict]. Master Thesis, Muhammadiyah University of Malang, Malang, Indonesia. (In Indonesian)

Tambrin, 2011. [Artificial Insemination (AI) On Goat]. Bogor Agricultural University, Bogor, Indonesia, (In Indonesian).