PROCEEDING

The Third APIS – ARCAP 2016

The 3rd Animal Production International Seminar

The 3rd ASEAN Regional Conference on Animal Production

Enhancing Synergistic Roles of Stakeholders for Development of Sustainable Livestock Production

Batu, Indonesia, October 19-21, 2016

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Enhancing Synergistic Roles of Stakeholders for Development of Sustainable Livestock Production

Proceeding
The 3rd Animal Production International Seminar and The 3rd ASEAN Regional Conference on Animal Production (3rd APIS & ARCAP 2016)
Batu, Indonesia, October 19-21, 2016

Organized by:
Faculty of Animal Husbandry, Brawijaya University, Indonesia
In collaboration with:
Brawijaya University, Indonesia
Indonesian Society of Animal Science
Universiti Putra Malaysia, Malaysia
Malaysian Society of Animal Production
Rajamangala University of Technology Lanna, Thailand

Published by:

UB Press
Jl. Veteran 10-11 Malang 65145 Indonesia
Telp: 62-341-554357, Fax: 62-341-554357
E-mail: ubpress@ub.ac.id or ubpress@gmail.com
Website : http://www.ubpress.ub.ac.id
ISBN: 978-602-432-017-1
xxi +751 pp, 19 cm x 26 cm

Preface

Following the success of the First and Second Animal Production International Seminar (1st and 2nd APIS) held in 2010 and 2013, respectively, it has been held successfully a Collaborative Seminar of The 3rd Animal Production International Seminar and The Third ASEAN Regional Conference on Animal Production (3rd APIS & ARCAP 2016 Conference) in the Shining City of Batu, East Java Province, Indonesia from 19 to 21 October 2016 with the theme of Improving the Synergistic Roles of Stakeholders for Development of Sustainable Livestock Production. More than 150 Abstract and papers have been presented and discussed during the sminar by either keynote speakers or participants from different countries. The papers cover animal production and nutrition, animal reproduction and breeding, animal health and veteriner, animal products technology, as well as social, economy, and animal production systems.

Full papers of this seminar are published in this proceeding. It is hoped that this proceeding would provide valuable information and contribution for readers in improving the productivity and sustainability of livestock production.

To follow up the seminar and for regular and continuous discussion on the related aspects of sustainable livestock production development, it is the committee's great honours and pleasures to inform that The Fourth Animal Production International Seminar (4th APIS) will be held in 2019 and to invite again the participants (academics, scientist, practitioners, decision maker on livestock production as well as industries and government) to attend and actively support for the next success of the next APIS seminar.

Malang, October 22, 2016

Editors

Correlations between Crude Protein/Total Digestible Nutrients Ratio and Commercial Cuts Weight and Percentage of Thin Tailed Lambs

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Abstract

This study was conducted to studythe relationship between crude protein and total digestible nutrients (CP/TDN) ratio and shoulder, leg, and loin weight and percentage of thin tailed lambs. Twenty four heads of three months old male thin tailed lambs with initial body weight (BW) 14.19± 0.17kg were fattened by feda complete feed contained three levels of crude protein (CP; 12, 14 and 16%) and two levels of total digestible nutrients (TDN; 60, 70%) to give sixratios of CP/TDN. After 3 months fattening period, the lamb was slaughtered and commercially cut into 8 parts including shoulder, leg, and loin, and then weighed.The data was analyzed by correlation regression to determine the correlation between CP/TDN ratio and shoulder, leg, and loin weight and percentage of weaning lambs carcass. The results showed that the CP/TDN ratio in feed has a medium correlation value with the shoulder weight (r=0.57), shoulder percentage (r = 0.42), and leg weight (r = 0.43), while low correlation was found in loin weight (r = 0.25), and negatively low correlated with leg and loin percentage, being-0.28 and -0.15,respectively. Based on the results of this study, it can be concluded that the weight and percentage of shoulder,and leg and loin weight could be influenced by CP/TDN ratio in feed, but has no effect on the percentage of leg and loin.

Keywords: *thin tailedlamb,CP and TDN ratio, weight and percentage commercial cuts*

Introduction

The effort to improvelambs production in Indonesia is taking by increasing nutrient content in the diet, mainly based on thecontent of crude protein (CP) and total digestible nutrients (TDN). These CP and TDNas well as CP/TDN ratiois required for the muscle formation and growth rate. Purbowati *et al*. (2013) reported that theincreasing protein levels up to 11.7% and TDN 58.6% could increase meat production of goat.The balance of CP/TDN ratio will effect to optimum the rumen fermentation eficiency as well as feed utilization (Ginting, 2005).

The big portion of meat in carcass is contained mainly in leg, shoulder, and loinwhich are different in their growth rate.The leg and shoulder are earlier developed than of the loin (Owens*et al*., 1993). This different of growth rate of these carcass portions may lead to vary the amount of the leg, shoulder, and loinportions as well as in the percentage. Therefore, to evaluate the suitable level of CP and TDN as well as CP/TDN ratio in feed, this study was carried out.

Methodology

Experimental animals, feed, and equipments

Twenty four heads of male thin tailed lambs (± 3 months old) with initial body weight (BW)14.17± 0.17 kg (CV= 2.41%) were used in this study. They were grouped into six, each consisted of 4 lambs and fed a complete feed contained three levels of crude protein (CP; 12, 14 and 16%) and two levels of total digestible nutrients (TDN; 60, 70%) to give six ratios of CP/TDN, i.e. 12/60; 12/70; 14/60; 14/70; 16/60 and 16/70, respectively. The complete feed was composed of rice bran, cassava meal, sugar cane top, cassava peel, soybean meal, fish meal, molasses and mineral and was given in pelleted form. All lambs were housed in individual pen and given freely access to feed and water throughout the experimental period.

Slaughter procedure

All lambs were slaughtered randomly after 3 months of feeding. Lambs were fasted for 6 hours before slaughtered. The slaughter method was done follow halal and standard slaughtering methods. The carcass was kept in a cold room at 18°C for 10 hours. Carcass were cut into 8 parts as described by Forrest *et al*. (1975) after removing the kidney fat. Each part of shoulder, leg, and loin were weighed.

Parameters

Parameters measured were CP/TDN ratio of feed given to the lamb and weight and percentage of shoulder, leg, and loin. The CP and TDN ratio was calculated by dividingpercentage of CP and TDN of the feed given and was expressed in decimal.

Data analysis

The relationship between CP/TDN ratio with weight and percentage of shoulder, leg, and loin were analyzed by correlation regression analysis. The strength of correlation coefficient wasevaluated by the value described by Sugiyono (2008), i.e. 0.00 - 0.19 (very low), 0.20 - 0.39 (low), 0.40 - 0.59 (medium), 0.60 - 0.79 (strong), and 0.80 - 1.00 (very strong).

Results and Discussions

The relationship between CP/TDN ratioonthe weight and percentage of leg, shoulder, and loin

The correlation between CP/TDN ratio and weight and percentage of leg, shoulderand loinare shown in Figure1 and 2. The correlation of CP/TDN ratio was found positiveon weight of leg, shoulderand loin,but on percentage, there were weak and negative correlation found on leg and loin, but medium and positive was found on shoulder.

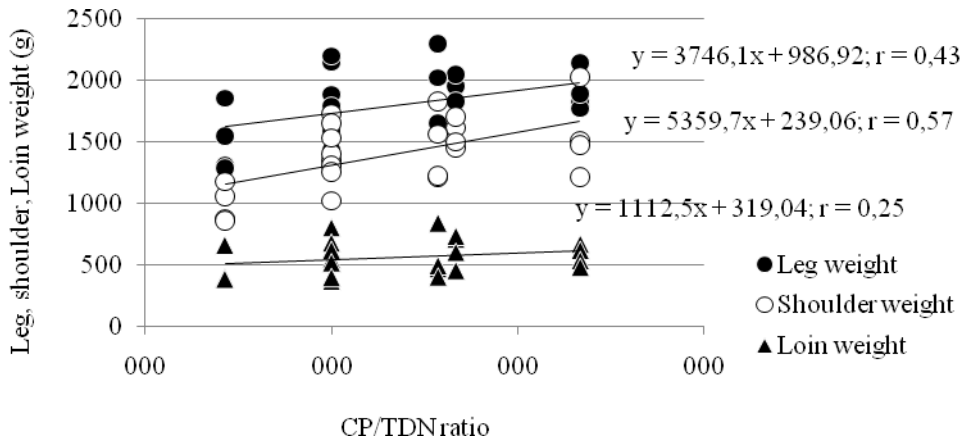

Figure 1. The relations between CP/TDN ratio on weight of leg, shoulder and loin

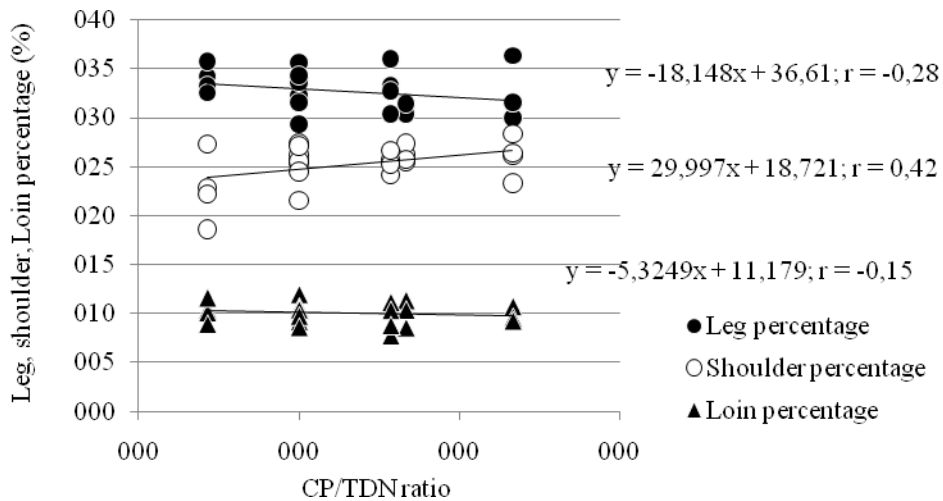

Figure 2. The correlations between CP/TDN ratio on percentage of leg, shoulder and loin

Correlation value between CP/TDN ratio to the weightof leg, shoulder and loin was 0.43, 0.57, and 0.25, while to the percentage of leg, and loin was

negative (-0.28 and -0.15, respectively) while for shoulder 0.42. These results indicated the CP/TDN ratio is able to accelerate the growth of muscle tissues in lambs, but at this stage the acceleration only reach shoulder as the earlier develop than leg and loin agreed to body components growth rate described by Owens *et al.* (1993) that ingeneral muscle development start from head and backward to tail and from extremities to the core towards the loin.The higher CP/TDN ratio resulted a considerable increasing in the amount of weight and percentage of shoulder. Shoulder is one of the moving parts, it has faster growth rate than other part does. The amount of deposition of protein and energy intake will speed up the tissues growth, andleggrows after the shoulder. According to Mawati *et al.*(2004)legs needed to walk and move, so it has fast growth rate in life and loin is more extensive later in life. Therefore, the correlation betweenloinand CP and TDN ratio is lower than the other. Forrest *et al.* (1975) reported that rack and loin have slow growth rate and late maturity.

There is a negative correlation between the percentages of leg and loin with CP and TDN ratio. Protein in the diet has a corresponding formation of lamb's tissues, so that the higher protein levels can increase the carcass weight. According to Rianto *etal.* (2006) the amount of protein deposition will be used for growth that will improve the carcass weight. Energy also has a function in the synthesis of fat, so the higher energy in feed, the more fat is formed. This is confirmed the results of study by Prakoso *etal.* (2009), that the higer TDN levels of feeding deposited more fat in carcass production. Therefore, the balance of protein and energy should be appropriated to produce optimal growth.

Conclusion

It can be inferred that there is a strong relations between the ratio of CP and TDN with the weight and percentage of leg, shoulder, and loin. CP and TDN ratio in the feed is able to optimize the growth rate of animals.

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