INTISARI

Penggunaan *Undegraded Protein* dalam Pakan Lengkap Untuk Meningkatkan Produktivitas Sapi Potong

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Empat tahap penelitian dilakukan untuk mengetahui pengaruh suplementasi *undegraded protein* (UDP) pada pelet pakan lengkap terhadap produktivitas dan kualitas daging sapi potong. Pelet pakan lengkap disusun dari hasil samping pengolahan hasil pertanian. Tahap pertama, pembuatan UDP dari bungkil kedelai diproteksi formaldehid 0, 0,5, 1,0, 1,5, 2,0, dan 2,5% (berat/volume). Tahap kedua, UDP terbaik tahap pertama disuplementasikan pada pelet pakan lengkap pada tingkat 0, 2,5, 5,0, 7,5 dan 10% (berat/berat) diuji secara *in vitro* terhadap aktivitas mikrobia: produksi gas, jumlah protein mikrobia, konsentrasi dan proporsi asam lemak volatil. Tahap ketiga, tingkat suplementasi UDP terbaik tahap kedua, diujikan secara *in vivo* pada 8 ekor sapi Peranakan Ongole jantan terhadap pertambahan berat badan harian (PBBH), kecernaan pakan dan sintesis N protein mikrobia. Pelet pakan lengkap diberikan 2,6% berat badan pada 4 ekor tanpa suplementasi UDP dan 4 ekor dengan disuplementasi UDP 5 g/kg berat badan^{0,75}. Tahap keempat, 16 ekor sapi Peranakan Ongole jantan diberi pelet pakan lengkap 2,6% berat badan, secara acak dibagi menjadi 4 kelompok suplementasi UDP yaitu 0, 2,5, 5,0, dan 7,5% kemudian diukur konsumsi pakan dan PBBH, selanjutnya 3 dari 4 ekor sapi dalam setiap kelompok dipotong untuk mengukur persentase karkas, kualitas daging, dan kandungan formaldehid dalam daging, hati dan ginjal. Hasil penelitian menunjukkan penggunaan 1% formaldehid paling baik pada pembuatan UDP dan suplementasi UDP 7,5% dari pelet pakan lengkap tidak mempengaruhi aktivitas mikrobia secara *in vitro*. Kecernaan pakan, persentase karkas, sintesis N protein mikrobia, kualitas fisik dan kimia daging tidak dipengaruhi suplementasi UDP, tetapi suplementasi 5% UDP meningkatkan konsumsi dan kecernaan protein serta PBBH. Suplementasi 7,5% UDP aman bagi ternak dan tidak meninggalkan residu formaldehid dalam jaringan ternak. Penggunaan formaldehid sampai 1.000 ppm dalam pakan, aman bagi ternak, mikrobia rumen dan lingkungan. Suplementasi UDP dapat meningkatkan efisiensi pakan dan pertambahan berat badan jika diberikan 5% dari pelet pakan lengkap.

Kata kunci: *Undegraded protein*, Formaldehid, Pelet pakan lengkap, Produktivitas sapi potong, Kualitas daging

ABSTRACT

The Utilization of Undegraded Protein in Complete Feed to Increase Beef Cattle Productivity

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Four stages of studies were conducted to determine the effect of undegraded protein (UDP) supplementation in complete feed pellet on productivity and meat quality of beef cattle. Complete feed pellet was composed from byproduct processing of agricultural products. The first study, UDP was made from soybean meal protected using formaldehyde of 0, 0.5, 1.0, 1.5, 2.0, and 2.5% (weight/volume). The second study, the best UDP resulted from first study, was supplemented into complete feed pellet at levels of 0, 2.5, 5.0, 7.5 and 10% (weight/weight) were tested to in vitro microbial activities: production of gas, the amount of microbial protein, concentration and the proportion of volatile fatty acids. The third study, the best level of UDP supplementation in the second study, was applied to 8 males Ongole crossbred cattle on average daily gain (ADG), feed digestibilities and microbial synthesis of N protein. Complete feed pellets was given in 2.6% of body weight to 4 heads without supplementation of UDP and 4 heads with 5 g UDP suplementation/kg metabolic body weight. The fourth study, 16 heads of male Ongole crossbred were given complete feed pellets in 2.6% body weight and were randomly divided into 4 groups, namely UDP supplementation of 0, 2.5, 5.0, and 7.5% subsequently measured feed intake and ADG, in the end of study 3 of 4 cows in each group were slaughtered to measure the percentage of carcass, meat quality, and the formaldehyde content in meat, liver and kidneys. The results showed the use of 1% formaldehyde was best at making UDP and UDP supplementation 7.5% of complete feed pellets do not affect the microbial activity in vitro. Feed digestibility, carcass percentage, microbial protein synthesis of N, physical and chemical quality of the meat were not influenced by supplementation UDP, but 5% UDP supplementation increased protein intake and digestibility and ADG. Supplementation of 7.5% UDP was safe for animal and had no residue of formaldehyde in animal tissues. The utilization of formaldehyde up to 1,000 ppm in beef cattle feed was safe for animal, rumen microbes and the environment. The UDP supplementation can improve feed efficiency and weight gain when be applied 5% of complete feed pellets.

Keywords: Undegraded protein, Formaldehyde, Complete feed pellets, Beef cattle productivity, Meat quality