

## PENGGUNAAN BUNGKIL INTI SAWIT DENGAN SUPLEMENTASI ENZIM TERHADAP PRODUKTIVITAS, KUALITAS KARKAS, DAN KESEHATAN SALURAN CERN AYAM BROILER

### INTISARI

Siti Zubaidah  
21/490982/SPT/00234

Bungkil Inti Sawit merupakan limbah dari pembuatan minyak inti sawit yang mempunyai serat kasar 13% - 20%, manan 35% sehingga harus diberikan enzim eksogen ketika bungkil inti sawit dijadikan sebagai pakan ternak unggas. Penelitian ini bertujuan untuk mengetahui komposisi kimia, pencernaan *in vitro* bahan kering, produktivitas, kualitas karkas, dan kesehatan saluran cerna ayam broiler. Bungkil inti sawit diperoleh dari PTPN III. Sebanyak 1.260 ekor ayam broiler jantan strain *Indian River* dipelihara selama 35 hari dengan 7 perlakuan dan 6 ulangan. Setiap ulangan terdiri dari 30 ekor. Perlakuannya yaitu perlakuan enzim serta kadar bungkil inti sawit (PKC) 0%, 10% dan 20%. Perlakuan enzim 1 terdiri dari NSPase 200 g/ton, mananase 182 g/ton, dan protease 130 g/ton pakan sedangkan enzim 2 terdiri dari NSPase 400 g/ton, mananase 182 g/ton, dan protease 260 g/ton pakan. Perlakuan pakan terdiri dari kontrol (P0), penambahan PKC 10% (P1), PKC 20% (P2), PKC 10% dengan enzim 1 (P3), PKC 20% dengan enzim 2 (P4), PKC 10% dengan enzim 1 (P5), dan PKC 20% dengan enzim 2 (P6). Parameter yang diamati meliputi komposisi kimia, *gross energi*, asam amino, asam lemak, struktur dinding PKC pencernaan bahan kering secara *in vitro* unggas, performa ayam broiler, biokimia darah, persen relatif organ saluran pencernaan, dan histomorfologi usus. Data komposisi kimia, asam lemak daging, dan keanekaragaman mikrobial dianalisis secara deskriptif, sedangkan pencernaan bahan kering, performa ayam broiler, biokimia darah, persen relatif organ saluran pencernaan, dan histomorfologi usus dianalisis menggunakan analisis variansi pola searah dan dilanjutkan dengan uji *Duncan's multiple range test* (DMRT). Hasil diperoleh bahwa PKC tanpa cangkang mempunyai kualitas kimia lebih baik dibandingkan dengan cangkang. Perlakuan enzim pada PKC memperlihatkan bahwa enzim dapat melonggarkan ikatan dinding sel. Kecernaan *in vitro* bahan kering PKC tanpa cangkang mempunyai kecernaan 82,59% pada perlakuan NPSase 200 g/ton, mananase 182 g/ton, dan protease 130 g/ton. Pemberian PKC dengan suplementasi enzim mampu meningkatkan ( $P<0,05$ ) konsumsi pakan, *average daily gain*, pertambahan bobot badan, bobot panen, berat karkas, albumin, tinggi villi dan lebar villi duodenum, tinggi villi jejunum, tinggi villi dan lebar villi ileum. serta menurunkan ( $P<0,05$ ) *Feed Conversion Ratio*, persen berat relatif proventrikulus, ventrikulus, kedalaman kript duodenum, tetapi tidak signifikan terhadap kadar glukosa, kadar total kolesterol, persen berat relatif hati, pankreas, duodenum, jejunum, ileum, kedalaman kript jejunum dan ileum. Kesimpulannya bahwa pemberian PKC 10% dan NPSase 200 g/ton, enzim mananase 182 g/ton, dan protease 130 g/ton mempunyai performa, kualitas karkas, dan kesehatan saluran cerna ayam broiler yang paling baik.

Kata kunci: Mananase, NSPase, Protease, Kesehatan saluran cerna, Kualitas karkas, Produktivitas ayam broiler

## USE PALM KERNEL CAKE WITH ENZYME SUPPLEMENTATION ON PRODUCTIVITY, CARCASS QUALITY, AND GASTROINTESTINAL HEALTH OF BROILER CHICKENS

### ABSTRACT

Siti Zubaidah  
21/490982/SPT/00234

Palm kernel cake is a by product from the manufacture of palm kernel oil which has crude fiber 13% - 20%, mannan 35% so that exogenous enzymes must be given when palm kernel cake is used as poultry feed. This study aimed to determine the chemical composition, *in vitro* dry matter digestibility, as well productivity, carcass quality, and gastrointestinal health of broiler chickens. Palm kernel cake was obtained from PTPN III. A total of 1,260 male *Indian River* strain broiler chickens were reared for 35 days with 7 treatments and 6 replicates. Each replicate consisted of 30 chickens. The enzymes used were enzyme 1 and enzyme 2, and palm kernel cake 0%, 10% and 20%. Enzyme 1 consisted of NSPase 200 g/ton, mananase 182 g/ton, and protease 130 g/ton feed while enzyme 2 consisted of NSPase 400 g/ton, mananase 182 g/ton, and protease 260 g/ton feed. Feed treatments consisted of control (P0), addition of palm kernel cake (PKC) 10% (P1), addition of PKC 20% (P2), addition of PKC 10% with enzyme 1 (P3), addition of PKC 20% with enzyme 2 (P4), addition of PKC 10% with enzyme 1 (P5), and addition of PKC 20% with enzyme 2 (P6). Parameters observed including chemical composition, gross energy, amino acids, fatty acids, cell wall structure, poultry *in vitro* dry matter digestibility, broiler performance, blood biochemistry, relative percent of digestive tract organs, and intestinal histomorphology. Data on chemical composition, meat fatty acids, and microbial diversity were analyzed descriptively, while dry matter digestibility, broiler performance, blood biochemistry, relative percent of digestive tract organs, and intestinal histomorphology were analyzed using analysis of variance and followed by Duncan's multiple range test (DMRT). The results showed that PKC without shell had better chemical composition compared to PKC with shell. Enzyme treatment on PKC showed that enzymes could loosen cell wall bonds. *In vitro* dry matter digestibility of PKC without shell 82.59% with supplementation of 182 g/ton, NPSase 200 g/ton, and protease 130 g/ton. Feeding palm kernel cake with enzyme supplementation could increase ( $P<0.05$ ) feed consumption, average daily gain, body weight gain, harvest weight, carcass weight, albumin, villi height and villi width of duodenum, villi height of jejunum, villi height and villi width of ileum. PKC also decrease ( $P<0.05$ ) Feed Conversion Ratio, relative weight percent of proventriculus, ventriculus, depth of duodenal crypts, but did not increase glucose levels, total cholesterol levels, relative weight percent of liver, pancreas, duodenum, jejunum, ileum, depth of jejunum and ileum crypts. It could be concluded that feeding 10% PKC and the enzymes NPSase 200 g/ton, mananase 182 g/ton, and protease 130 g/ton had the best performance, carcass quality, and health gasrointestinal broiler chickens.

Keywords: Broiler productivity, Carcass quality, Gastrointestinal health, Mannanase, NSPase, Protease.