

PENGARUH METODE FERMENTASI DAN PERBEDAAN *BINDER* TERHADAP KUALITAS PELET BERBASIS EKSKRETA AYAM SEBAGAI SUBSTITUSI PAKAN IKAN LELE

INTISARI

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Penelitian ini dilakukan melalui 3 tahap. Tahap 1 bertujuan untuk mengetahui metode dan waktu terbaik pada fermentasi ekskreta. Tahap 2 bertujuan untuk mengetahui *binder* yang menghasilkan kualitas terbaik dalam pembuatan pelet berbasis fermentasi ekskreta ayam. Tahap 3 bertujuan untuk mengetahui substitusi pakan pelet berbasis ekskreta terhadap produktivitas ikan lele. Penelitian Tahap 1 dilakukan fermentasi dengan metode anaerobik dan semi anaerobik (silo vs. terpal) dengan durasi (0 vs. 24 vs. 48 vs. 72 jam). Setiap perlakuan dilakukan fermentasi 100 kg dengan 3 replikasi. Hasil fermentasi dilakukan pengujian di laboratorium yang meliputi pengujian komposisi nutrisi melalui analisis proksimat, pengujian karakteristik fermentasi dan karakteristik mikrobial. Fermentasi dengan kualitas yang paling baik dijadikan kandidat penelitian tahap 2 dalam proses pembuatan pelet. Tahap 2 dilakukan pembuatan pelet berbasis ekskreta dengan menggunakan 3 jenis *binder* (pati 5%, vs. molasses 5% vs. *lignobond* 0,5%). Setiap perlakuan dilakukan *pelleting* 5 kg dengan 3 replikasi. Pelet diuji di laboratorium yang meliputi pengujian kualitas nutrisi melalui analisis proksimat, kualitas fisik dan penampakan fisik pelet. Hasil pelet yang paling baik dilakukan produksi massal untuk tahap 3 sebagai substitusi pakan ikan lele. Substitusi pakan pada ikan lele dilakukan dengan proporsi pelet ekskreta (0 vs. 25 vs. 50 vs. 75%). Pemeliharaan ikan lele dilakukan saat lele umur 30 hari setelah tetas sampai selama 7 minggu. Ikan yang digunakan sebanyak 30 ekor dengan 4 replikasi pada setiap perlakuan. Variabel yang diamati adalah pertambahan berat badan ikan lele, *feed cost ratio* (FCR), temperatur, pH, dan *dissolved oxygen* (DO) pada air kolam. Analisis data pada tahap 1 menggunakan rancangan acak lengkap faktorial 2×4 , sementara itu pada tahap 2 dan tahap 3 menggunakan rancangan acak lengkap *one way* ANOVA. Koefisien ortogonal kontras linier, kuadratik, dan kubik diperhitungkan pada fermentasi ekskreta dengan PROC GLM SAS *studio*. Hasil penelitian menunjukkan pelet berbasis ekskreta ayam yang difermentasi secara anaerobik selama 72 jam menunjukkan karakteristik biologis terbaik, dengan konsentrasi asam laktat, asam asetat, dan bakteri asam laktat (BAL) tertinggi, serta nilai pH, asam propionat, asam butirat, *Escherichia coli*, dan *Salmonella* sp. terendah. Formulasi pelet menggunakan binder berupa tepung tapioka 5%, molasses 5%, dan *lignobond* 0,5% tidak memengaruhi kandungan nutrisi maupun kualitas fisik pelet, termasuk nilai *modulus of uniformity* (MU), *modulus of fineness* (MF), *pellet durability index* (PDI), dan hardness. Penggunaan pelet fermentasi tersebut sebagai substitusi pakan hingga 25% tidak menurunkan performa pertumbuhan ikan lele, yang ditunjukkan melalui parameter berat, panjang, dan FCR yang sebanding dengan pakan komersial.

Kata kunci: *Binder* pelet, fermentasi ekskreta, substitusi pelet ekskreta

THE EFFECT OF FERMENTATION METHODS AND BINDER TYPE ON THE QUALITY OF EXCRETA BASED PELLET AS A SUBSTITUTE FEED FOR CATFISH

ABSTRACT

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This study was conducted in three experiments. Experiment 1 aimed to determine best methods and duration for the fermentation of excreta. Experiment 2 aimed to identify the binder that produces the best quality in the production of pellets based on fermented excreta. The best quality pellet was produced for experiment 3 as a substitute for catfish feed. Experiment 1 on the research involved two fermentation methods such as anaerobic and semi anaerobic (silo vs. tarpaulin) with varying duration (0 vs. 24 vs. 48 vs. 72 hours). Each treatment was fermented 100 kg with 3 replications. The fermentation products were tested in the laboratory such as chemical composition, fermentation characteristics, and microbiology characteristics. The best fermentation product was used as a candidate for experiment 2 on pelleting process. Experiment 2 carried out pelleting excreta fermentation using three types of binders (starch 5% vs. molasses 5% vs. *lignobond* 0,5%). Each pellet was pelleted using 5 kg of excreta-based fermentation with 3 replications. Pellets were tested in laboratory including chemical composition through proximate analyses, physical quality, and physical appearance of pellets. The best quality pellet was conducted to mass scale produced for experiment 3 as substitution feed for catfish. Feed substitution in catfish was carried out using different proportions of excreta pellets (0 vs. 25 vs. 50 vs. 75%). Catfish cultivation was conducted from 30 days after hatching up to 7 weeks. Each treatment was conducted with four replications using 30 fish per bucket. The variables observed were the body weight and length, feed cost ratio (FCR), water quality including temperature, pH, and dissolved oxygen (DO). Data analysis in experiment 1 used completely randomized design factorial 2×4 , while in experiment 2 and experiment 3 used completely randomized design one way ANOVA. In addition, orthogonal coefficients for linear, quadratic, and cubic contrast were calculated on time excreta fermentation with PROC GLM SAS *studio*. The results of the experiment showed that excreta-based pellet that was fermented anaerobic for 72 hours producing highest concentration of acetic acid, lactic acid, and LAB, while pH value, propionic acid, butyric acid, *Escherichia coli*, and *Salmonella* sp. were lowest compared to other treatments. Pellet formulation used starch 5%, molasses 5%, and *lignobond* 0,5% did not affect the nutrient composition, physical quality including modulus of uniformity (MU) and modulus of fineness (MF), pellet durability index (PDI) and hardness. Fermented pellet used 5% starch as substitute commercial pellet up to 25% did not reduce the growth performance on catfish, which was showed by weigh, length, and FCR parameter.

Keyword: Excreta pellet substitution, fermented excreta, pellet binder.