

**MANFAAT NANOENKAPSULASI EKSTRAK DAUN SALAM  
(*Syzygium polyanthum*) SEBAGAI AGEN ANTIBAKTERI  
PADA KESEHATAN USUS, PRODUKTIVITAS TERNAK,  
DAN KUALITAS DAGING AYAM BROILER**

**INTISARI**

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Penelitian ini bertujuan untuk mengetahui manfaat nanoenkapsulasi ekstrak daun salam (*Syzygium polyanthum*) yang ditambahkan di dalam air minum sebagai agen antibakteri untuk meningkatkan kesehatan usus, produktivitas ternak, serta kualitas daging ayam broiler. Penelitian ini terdiri dari tiga tahap yaitu; tahap 1 berupa pengujian ketepatan formulasi perbandingan ekstrak daun salam (EDS): kitosan: *Sodium Tripolyphosphate* (STPP) dalam pembuatan nanoenkapsulasi serta karakterisasi nanoenkapsulasi ekstrak daun salam (NEDS). Penelitian tahap 2 berupa pengujian secara *in vitro* yaitu uji daya hambat bakteri. Penelitian tahap 3 berupa pengujian formulasi terbaik yang diperoleh dari tahap 1 dan 2 secara *in vivo*. Pemeliharaan dilakukan selama 35 hari menggunakan 192 ayam broiler jantan yang terbagi menjadi 6 perlakuan dan 4 ulangan dengan 8 ekor setiap kandang. Setiap ayam dalam penelitian ini diberikan pakan basal dan salah satu perlakuan air minum sebagai berikut: air minum tanpa penambahan aditif sebagai kontrol negatif (P0), air minum + 50 ppm antibiotik tetrasiklin sebagai kontrol positif (P1), air minum + 1% EDS (P2), air minum + 3% EDS (P3), air minum + 1% NEDS (P4), dan 3% NEDS (P5). Data yang diperoleh dianalisis dengan menggunakan Rancangan Acak Lengkap pola searah berbasis nilai probabilitas kurang dari 5%. Apabila terdapat perbedaan antar perlakuan, data diuji lanjut menggunakan Duncan's new Multiple Range Test atau Orthogonal Contrast Test. Hasil penelitian pada tahap 1 menunjukkan bahwa formulasi terbaik nanoenkapsulasi ekstrak daun salam adalah 1:4:1/90 dengan ukuran partikel sebesar 478,3 nm dan zeta potensial sebesar +42,3 mV. Morfologi partikel yang dihasilkan NEDS adalah campuran nanostruktur bulat, kubus, dan batang. Hasil penelitian pada tahap 2 menunjukkan bahwa EDS dan NEDS dapat menghambat ( $P < 0,05$ ) pertumbuhan bakteri *Escherichia coli*, *Salmonella typhimurium*, dan *Lactobacillus acidophilus*. Hasil penelitian tahap 3 menunjukkan bahwa penambahan NEDS 3% menurunkan konsumsi air minum ( $P < 0,05$ ) dan meningkatkan daya ikat air ( $P < 0,05$ ), sementara penambahan NEDS 1% menurunkan angka keempukan ( $P < 0,05$ ) dan meningkatkan kadar lemak ( $P < 0,05$ ) daging ayam broiler. Dapat disimpulkan bahwa ekstrak daun salam memiliki efek antibiotik alami terhadap beberapa mikroba patogen dan penambahan EDS maupun NEDS meningkatkan kualitas daging, meskipun tidak mempengaruhi kinerja pertumbuhan dan kesehatan usus ayam broiler secara umum.

Kata kunci: Kesehatan usus, Kualitas daging, Nanoenkapsulasi, Produktivitas, *Syzygium polyanthum*

**BENEFITS OF NANOENKAPSULATION OF SALAM (*Syzygium polyanthum*)  
LEAF EXTRACT AS AN ANTIBACTERIAL AGENT ON  
INTESTINAL HEALTH, LIVESTOCK PRODUCTIVITY,  
AND MEAT QUALITY OF BROILER CHICKENS**

**ABSTRACT**

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This study was aimed to determine the effects of bay (*Syzygium polyanthum*) leaf extract nanoencapsulation (NBLE) as antibacterial agent added in drinking water on the improvement of intestinal health, productivity, and meat quality in broiler chickens. This research consisted of three stages: the first stage was determination of the proper formula of bay leaf extract (BLE): chitosan: Sodium Tripolyphosphate (STPP) for nanoencapsulation and characterization of the bay leaf extract nanoencapsulation. The second stage was an *in vitro* antibacterial study of nanoencapsulation of bay leaf extract by observing the inhibition zone. The third stage was *in vivo* study using results of the both first and second studies to determine the efficacies of drinking water supplementation with different levels BLE on growth performance and meat quality of broiler chickens. The study was last for 35 days using 192 male broiler chickens which were divided into 6 treatments and 4 replications with 8 chickens per cage. The birds were given basal diet and one of the following drinking water treatments: drinking water without any supplementation as negative control (P0), drinking water + 50 ppm antibiotic tetracycline as positive control (P1), drinking water + 1% BLE (P2), drinking water + 3% BLE (P3), drinking water + 1% NBLE (P4), and 3% NBLE (P5). The obtained data were analyzed using completely randomized design with a one-way arrangement based on the probability value of less than 5%. Duncan's New Multiple Range Test or Orthogonal Contrast Test was used to separate data with significant different. Results of first study showed that the likely best formulation of bay leaf extract nanoencapsulation was 1: 4: 1/90 with a particle size of 478.3 nm and zeta potential of +42.3 mV. The particle morphology produced by NBLE was mixture of spherical, cubic, and rod nanostructures. Results of second study showed that BLE and NBLE inhibited ( $P < 0.05$ ) the growth of *Escherichia coli*, *Salmonella typhimurium*, and *Lactobacillus acidophilus* bacteria. The results of third study showed that the addition of 3% NBLE reduced drinking water consumption ( $P < 0.05$ ) and increased water binding capacity ( $P < 0.05$ ), while the addition of 1% NBLE reduced the tenderness rate ( $P < 0.05$ ) and increased fat content ( $P < 0.05$ ) of broiler chicken meat. It can be concluded that bay leaf extract has the antibacterial effect against pathogenic microbes and the addition of BLE or NBLE improved meat quality, even though did not affect growth performance nor overall intestinal health in broiler chickens.

**Keywords:** Growth performance, Intestinal health, Meat quality, Nanoencapsulation, *Syzygium polyanthum*