



UNIVERSITI PUTRA MALAYSIA

**COMPARISON BETWEEN ZEOLITE AND PROBIOTIC ADDED IN
RABBIT COMMERCIAL DIET IN REDUCING AMMONIA
CONCENTRATION**

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**FACULTY OF AGRICULTURE
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**COMPARISON BETWEEN ZEOLITE AND PROBIOTIC ADDED IN RABBIT
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BY

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CERTIFICATION

This project entitled "Comparison between zeolite and probiotic added in rabbit commercial diet in reducing ammonia concentration" is prepared by Izzuddin Bin Rusli and submitted to the Faculty of Agriculture in fulfillment of the requirements of the course SHW4999 (Final Year Project) for the award of the degree of Bachelor Of Agriculture (Animal Science).

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ABSTRACT

Rabbit is one type of animal that been reared in our country as farm animal. Despites of their cuteness, rabbits will produce waste that includes urine, manure and residue. The amount of waste will be threatens to our health and animal's. Strong smells of ammonia can be nuisance to people. Hence, reduction concentration of the ammonia emission can help to decrease suffocating of smell to the animals and worker. On top of that, if the concentration of ammonia is too high, it may risks the health and cause several problem especially respiratory systems. In view of their, a measure to reduce ammonia emission from rabbit excretion can be done by diet formulation. Apart from this, it also help environment from being polluted. Therefore, the study was aimed to conduct an experiment on feed additive in rabbit diet to reduce the concentration of the ammonia. This experiment was compared three different treatments that are control (commercial rabbit feed), zeolite (commercial rabbit feed added with zeolite) and probiotic (commercial rabbit feed added with probiotic) in rabbit diet. Ammonia was collected by using badge sampler. There are two different points of badge samplers has been placed for each cages. The reason for placed it at different point because the ammonia may not get caught by the badge sampler if only has one point of badge sampler during collection time. The samplers were analyzed at the laboratory to determine the concentration of NH_3 . The results appeared these additions of zeolite and probiotic into the feeds had reduced the level of ammonia concentration. For example, at day 4 of sampling, means for control treatment showed 0.42 mg/L. Meanwhile, there is slightly reduced means in zeolite and probiotic treatments that are 0.39 mg/L and 0.36 mg/L respectively. Thus, there are significant different ($p < 0.05$) between control treatment and probiotic treatment. Thus, hypothesis proven that zeolite and probiotic can be used to reduce ammonia.

ABSTRAK

Arnab ialah satu jenis binatang yang ditenak didalam negara kita sebagai ternakan ladang. Namun begitu, arnab akan menghasilkan sisa iaitu kencing dan tahi. Jumlah sisa yang banyak boleh mengancam kepada kesihatan pekerja dan ternakan. Bau ammonia yang kuat boleh jadi gangguan kepada mereka. Maka, pengurangan pengeluaran ammonia boleh membantu untuk mengurangkan sesak nafas serta mengurangkan bau kepada binatang dan pekerja. Selain daripada itu, jika ammonia terlalu tinggi, ia boleh mengambil risiko kesihatan dan menyebabkan beberapa masalah sistem-sistem pernafasan. Oleh kerana itu, satu langkah mengurangkan pengeluaran ammonia adalah melalui diet pemakanan arnab. Lantarannya, kajian ini dilakukan dengan menambah makanan tambahan kedalam makanan arnab bagi mengurangkan konsentrasi ammonia. Eksperimen ini telah membandingkan tiga kategori yang lain iaitu kawalan (memberi makanan arnab komersial), zeolite (memberi makanan arnab komersial serta tambahan dengan zeolite) dan probiotik (memberi makanan arnab komersial tambahan dengan probiotik) di dalam diet arnab. Ammonia dikumpulkan dengan menggunakan 'badge sampler'. Terdapat dua tempat berlainan diletakkan 'badge sampler' untuk setiap sangkar. Sebab diletakkan di tempat yang berlainan kerana ammonia tidak mungkin ditangkap oleh satu 'badge sampler'. Sampel dianalisis di makmal bagi menentukan konsentrasi NH_3 . Keputusan ammonia menunjukkan pencampuran zeolite dan probiotik kedalam makanan telah mengurangkan tahap konsentrasi ammonia. Misalnya, dihari keempat daripada pensampelan, kategori kawalan menunjukkan 0.42 mg/L. Tetapi, terdapat pengurangan sedikit di zeolite dan probiotik yang mana masing-masing merekodkan 0.39 mg/L dan 0.36 mg/L. Maka, terdapat perbezaan penting ($p < 0.05$) antara kategori kawalan dan kategori probiotik. Maka, hipotesis mempercayai bahawa zeolit dan probiotik boleh digunakan untuk mengurangkan ammonia.

CHAPTER 1

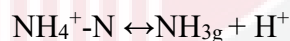
INTRODUCTION

Rabbit is commonly reared in Malaysia as pet and also as farm animals. Features of rabbits make it looks attractive to be adopted as pet and usually for farm, rabbits reared for its meat. Mostly rabbit consume fiber as it diet. It also needs some protein in their diet to supply them energy and for healthy growth. Accumulation of urine and manure creates ammonia emission to the environment and pollute air. Ammonia concentration increases based on the diet the rabbits eaten. Reduction of ammonia concentration can be done by altering the composition of the diet by adding other materials such as zeolite and probiotic. Zeolite and probiotic are already known used in animal feed for increase the nutritive value in the feed as it also gives other good benefit to the animal performance. As zeolite and probiotic boost up performance, this study been held to determine whether this two materials can reduces the ammonia concentration in the rabbit waste.

1.1 Background of Study

Atmospheric ammonia originating from agricultural activities has been implicated in widespread damage to natural ecosystems in Europe (Asman *et al.* 1998; Hacker & Du, 1993). There is also growing public concern in the US that current manure management practices may be promoting ammonia enrichment of streams, estuaries, and coastal waters. Agriculture is the major source of ammonia emissions to the atmosphere, contributing about 90% of the total in the Western Europe according to recent estimates (Kirchman *et al.*, 1998; Stevens & Laughlin, 1997; Bussink & Oenema 1998). Land application of manure contributes close to half (46%) of the ammonia emissions from livestock in the UK, animal housing about one-third, and waste storage and grazing the remaining 20% (Phillips & Pain, 1998). Smaller ammonia emissions are attributed to non-animal agricultural, such as fertilizer and crops (Sommer & Hutching, 1995).

Ammonia volatilization occurs because ammonium-N in manure or solution is converted to dissolved ammonia gas, by the reaction:



Management of ammonia volatilization should include analysis of ammonium-N, total N, and dry matter (DM). Knowledge of ammonium -N content is essential to set the upper limit of ammonia losses and gain better estimates of plant available N. Knowledge of dry matter can be useful in estimating ammonia loss rates.

1.2 Problem Statement

Result from the rabbit farming, accumulation of ammonia cannot be avoided. Thus, reduction of ammonia concentration can be much relieve for workers and animals. High concentration of ammonia can give very pungent smell and gives uncomfortable condition for breathing and not good as well for our health. By reducing the ammonia concentration, in hope it can give pleasant ambience and purify the air environment at the farm.

1.3 Significance of Study

The aim of this study is to compare ammonia gas concentration between zeolite and probiotic by adding it in rabbit commercial diet. The important of this study is to improve quality of air and secure health for animals and workers.

1.4 Objective of Study

There are 2 objectives that want to achieve at the end of study this which are:-

1. To determine the comparison between using zeolite and probiotic in reducing ammonia gas concentration.
2. To determine the comparison between two point placing of Badge sampler.

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