

# Effect of addition level of *Pandanus amaryllifolius* Roxb. on Broiler performances at starter period

Eko Widodo<sup>1,\*</sup>, Jein Rini Leke<sup>2</sup>, Khusnul Teguh Pangestu<sup>3</sup>, Aulia Hidayatul<sup>4</sup>, Dhimas Rodho Purnomo<sup>4</sup> and Muhamad Farhan<sup>4</sup>

<sup>1</sup> Faculty of Animal Science, University of Brawijaya, Jl. Veteran, Malang 65145 – Indonesia

<sup>2</sup> Faculty of Animal Science, University of Sam Ratulangi, Bahu, Manado 95115 – Indonesia

<sup>3</sup> Magister Student at Faculty of Animal Science, University of Brawijaya, Jl. Veteran, Malang 65145 – Indonesia

<sup>4</sup> Undergraduate Student at Faculty of Animal Science, University of Brawijaya, Jl. Veteran, Malang 65145 – Indonesia

**Abstract.** *Pandanus amaryllifolius* Roxb. leaves are commonly used as food additives in many countries. Beside to improve taste, it is recognized to contain various compound groups namely alkaloid, saponins, flavonoids and tannins that have a role in antibacterial activity. However, the current research aim was to examine effect of using *Pandanus amaryllifolius* Roxb. leaves as feed additive in broilers. The method used was experiment, employing 6 treatments included P0: control feed; P0: control feed added with 0.1% zinc bacitracin; P1: control feed added with 0.5% *Pandanus amaryllifolius* Roxb. leaves powder; P2: control feed added with 1.0% *Pandanus amaryllifolius* Roxb. leaves powder; P3: control feed added with 1.5% *Pandanus amaryllifolius* Roxb. leaves powder; P4: control feed added with 2.0% *Pandanus amaryllifolius* Roxb. leaves powder. The variables measured were feed consumption, body weight gain and feed conversion ratio. The results indicated that in all variables no significant results were reported. Those indicated that addition of *Pandanus amaryllifolius* Roxb. leaves powder in broiler feed did not affect growth performances of broiler. It is concluded that the use of *Pandanus amaryllifolius* Roxb. leaves powder as feed additive did not change growth of broiler, probably due partly to its antibacterial effect.

## 1 Introduction

In the era of non-antibiotic removal in the poultry feed has encourage the elaborative use of antimicrobial agents from many different plants to maintain good productivity of animal. *Pandanus amaryllifolius* Roxb. leaves are commonly used as food additives in many Asian countries. It is commonly found in the coastal area. Beside to improve taste, it is recognized to contain various active compound groups namely alkaloid, saponins, flavonoids and tannins that have a role in antibacterial activity.

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\* Corresponding author: [eko.widodo@ub.ac.id](mailto:eko.widodo@ub.ac.id)

The use of natural antimicrobial products to replace the use of antibiotics has been a current trend to fine safer product for the consumers. The use of *Pandanus amaryllifolius* which contain active substance such as alkaloid might be effective antimicrobial agent. Research in Indonesia reported by [1] reported *Pandanus amaryllifolius* showed antibacterial effect towards some dandruff bacteria. Other Research in Indonesia reported by [2] reported *Pandanus amaryllifolius* showed antibacterial effect against *Salmonella thypii*. In addition, research by [3] reported *Pandanus amaryllifolius* showed antibacterial effect towards *Candida albicans*. But, there has been limited report with regard to the use of *Pandanus amaryllifolius* meal as feed additive for poultry. The only report is research carried out by [4] in Thailand. The result indicated that under open house system the use of 5g/day improved 11% of egg production of laying chicken, but no improvement was obtained for poultry house equipped with evaporative cooling system. However, the current research aim was to examine effect of using *Pandanus amaryllifolius* Roxb. leaves as feed additive in broilers.

## 2 Materials and methods

### 2.1 Materials

Materials used were 270 one-day broiler chicks, concentrate feed and other feedstuffs were purchased from local poultry shop in Malang. The chicks were distributed to 6 different treatments and each treatment had 5 replications, of 9 chicks each. They were fed and provided water drink *ad libitum*. Raising period of the chicks was until 3 weeks old.

### 2.2 Method

The method used was experiment. The treatments used included

- P0 : basal feed without antibiotic
- P0+ : basal feed added 0.1% antibiotic
- P1 : basal feed + pandanus fluor 0.5%
- P2 : basal feed + pandanus fluor 1.0%
- P3 : basal feed + pandanus fluor 1.5%
- P4 : basal feed + pandanus fluor 2.0%

Each bird was fed *ad libitum*. Water was provided *ad libitum*. The basal feed used was a commercial concentrate feed produced by PT New Hope, Sidoarjo. The starter feed were adjusted by mixing concentrate feed with fish meal, soybean meal, moringa leaf meal, mineral and palm oil, to suit the nutrient requirement set by [5]. The variables included feed consumption, body weight gain and feed conversion ratio.

### 2.3 Statistical Analysis

Data were subjected to one-way analysis of variance. If significant effect exists, then continued by least significant different test.

## 3 Results and discussion

The results indicated that feeding treatments significantly ( $P < 0.05$ ) influenced feed consumption, body weight gain dan feed conversion ratio. On the basis on feed consumption, it showed that feeding 2% *Pandanus amaryllifolius* (P4) had similar level with antibiotic given group (P0+) and significantly higher than other treatments. Consequently, body weight gain of P0+ group was significantly ( $P < 0.05$ ) higher than other treatment. The summary results of research in indicated in Table 1.

Table 1. Effect of gradual inclusion of *Pandanus amaryllifolius* in feed on Broiler Starter Performance

Treatment	Feed consumption (g/bird)	Body weight gain (g/day)	Feed conversion Ratio
P0	1034 <sup>a</sup> ± 17	585 <sup>a</sup> ± 15	1.77 <sup>a</sup> ± 0.06
P0+	1077 <sup>b</sup> ± 26	607 <sup>b</sup> ± 36	1.78 <sup>a</sup> ± 0.12
P1	1050 <sup>a</sup> ± 38	557 <sup>a</sup> ± 39	1.87 <sup>b</sup> ± 0.07
P2	1044 <sup>a</sup> ± 45	549 <sup>a</sup> ± 35	1.91 <sup>b</sup> ± 0.12
P3	1034 <sup>a</sup> ± 29	565 <sup>a</sup> ± 22	1.83 <sup>b</sup> ± 0.10
P4	1072 <sup>b</sup> ± 14	570 <sup>a</sup> ± 42	1.89 <sup>b</sup> ± 0.12

The active substance especially flavonoid of *Pandanus amaryllifolius* leaf is a bit low, which was 1.46 g/100g much lower as compared to neem leaf (2.44 g/100g) or bitter leaf (2.58 g/100g [6]. Presumably, the effect of active substance in *Pandanus amaryllifolius* leaf might be too low to influence physiological changes of broiler chicks. The highest level of *Pandanus amaryllifolius* (P4) failed to attain high body weight gain might be attributable to the higher fiber content of the leaf of *Pandanus amaryllifolius*. The current research analyzed protein and crude fiber contents of *Pandanus amaryllifolius* which was 9.315 and 41.71%, respectively. However, [7] reported their findings that type of fiber influence the digestibility of nutrient of poultry, of which dietary lignin was more effective in increasing protein digestibility and therefore significantly increased weight gain than cellulose and hemicellulose. When the results were compared to control groups (P0 and P0+), broiler weight gain and feed conversion were impaired by any levels of inclusion of *Pandanus amaryllifolius* in the feed. Since there is no report yet on the fiber composition of the leaf of *Pandanus amaryllifolius*, it is speculated that the leaf contains more cellulose than hemicellulose. This fiber content might also cause to lower protein digestion and as a result increase the feed conversion ratio. However, as the poultry grow older it could improve the ability to digest nutrients [8], or the use of enzyme might further improve performance of broiler [9]. Therefore, further direction of research must consider the use of older birds and or in combination with enzymes.

## 4 Conclusion

From the point of production, *Pandanus amaryllifolius* inclusion might impair production performances of broiler.

From the point of antibiotic removal, *Pandanus amaryllifolius* might not be able to effectively act as antimicrobial agent.

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