World Journal of Biology Pharmacy and Health Sciences
eISSN: 2582-5542
Cross Ref DOI: 10.30574/wjbphs
Journal homepage: https://wjbphs.com/

(RESEARCH ARTICLE)

Check for updates

Percentage of commercial broiler carcasses supplemented with *Poultry-Bs* Probiotics

Ni Putu Gitapramesti Tampa [1], Ni Wayan Siti [2,*], Desak Putu Mas Ari Candrawati [2] and Ni Wayan Ayu Ningsih [2]

[1] *Bachelor's Program, Faculty of Animal Husbandry, Udayana University, Badung, Bali Indonesia.*
[2] *Faculty of Animal Husbandry, Udayana University, Badung, Bali, Indonesia.*

World Journal of Biology Pharmacy and Health Sciences, 2026, 25(03), 272-276

Publication history: Received on 17 February 2026; revised on 26 March 2026; accepted on 28 March 2026

Article DOI: https://doi.org/10.30574/wjbphs.2026.25.3.0172

Abstract

Broilers are one of the main sources of animal protein that play an important role in meeting the community's food needs. Therefore, efforts to improve the percentage of commercial carcass cuts continue to be developed, one of which is through probiotic supplementation. The impact of Poultry-BS probiotic supplementation through a water based delivery system on the percentage of commercial carcass parts was investigated in this study. A total of four treatments were evaluated within a CRD (Completely Randomized Design) framework, where each group was replicated fivefold. Within this setup, four broilers were allotted to each experimental pen, serving as the primary unit of observation. The treatments were P0 (without probiotic supplementation), P1 (0.25% *Poultry-BS*), P2 (0.5% *Poultry-BS*), and P3 (0.75% *Poultry-BS*). The observed variables included the percentages of breast, back, wings, thigh, and drumstick. The results showed that the administration of *Poultry-BS* probiotic through drinking water had no significant effect (P>0.05) on all observed variables compared to the control. It can be concluded that supplementation of *Poultry-BS* probiotic through drinking water has not been able to improve the percentage of commercial carcass cuts in broilers

Keywords: Broiler; Poultry-BS Probiotic; Performance; Feed Conversion Ratio; Carcass

1. Introduction

The efficiency of broiler production during the rearing phase significantly dictates the quality and quantity of commercial carcass cuts. In practice, farmers often encounter obstacles such as bacterial infections, environmental stress, and digestive microflora imbalances that hinder nutrient absorption and growth. According to [1], these issues are the primary causes of sub-optimal growth and reduced carcass weight, which lead to disproportionate commercial cuts and longer rearing periods. This decline in production efficiency not only lowers the quality of the meat but also negatively impacts the economic returns and market competitiveness for poultry farmers.

Historically, Antibiotic Growth Promoters (AGP) were widely used in feed to enhance growth and suppress diseases; however, their continuous use poses serious risks of bacterial resistance and antibiotic residues in the meat. Consequently, the Indonesian government banned AGP through Ministry of Agriculture Regulation Number 14 of 2017 [2], necessitating safe and sustainable alternatives like probiotics. [3] define probiotics as live microorganisms that improve host health by balancing the digestive microflora. Furthermore, [4] explains that these microbes work by neutralizing toxins and competing with pathogens for nutrients, thereby strengthening the animal's immune system without the harmful side effects of chemical antibiotics. The implementation of probiotics has been shown to enhance digestion and feed conversion efficiency, allowing broilers to reach harvest weight faster with superior carcass quality. This is supported by the findings of [5], who demonstrated that probiotic administration effectively improves broiler performance. In this context, the P2MW Bio-Safe team developed "Poultry-BS," a lactic acid bacteria-based probiotic enriched with herbal minerals such as calcium, phosphorus, iron, and zinc [6]. This innovation, as detailed by [6], serves

* Corresponding author: Ni Wayan Siti.

as a multifunctional biosupplement designed to support both the physiological development and the immune health of the birds through natural ingredients.

While several studies have explored the benefits of probiotics, such as [7] who examined their impact on digestive organ weight, and [8] who investigated the percentage of commercial carcass cuts using different probiotic strains, specific research on the "Poultry-BS" innovation remains limited. It is crucial to understand how this specific biosupplement influences the distribution of commercial cuts to ensure optimal productivity. Building on the performance standards established by [5], this study aims to evaluate the potential of Poultry-BS in optimizing broiler carcass quality in a sustainable manner.

2. Materials and methods

2.1. Materials

Eighty day old chick (averaging 42.28±2.28 g at commencement) were housed in twenty colony battery cages during a two month trial at the Sesetan Farm facility. Throughout the growth period, the birds received a CP 511B commercial ration and ad libitum well water, with the Poultry-BS probiotic (developed by the P2MW Bio-Safe team, Faculty of Animal Science, Udayana University) serving as the primary experimental agent to observe livestock physiological reactions

2.2. Method

2.2.1. Experimental Design

This study employed a Completely Randomized Design (CRD) consisting of four treatments and five replications. Each replication consisted of four broilers, resulting in a total of 80 broilers. The treatments applied were different levels of Poultry-BS probiotic administered through drinking water.

The treatments were as follows:

- P0: 0% Poultry-BS
- P1: 0.25% Poultry-BS per kg of body weight weekly
- P2: 0.50% Poultry-BS per kg of body weight weekly
- P3: 0.75% Poultry-BS per kg of body weight weekly

2.2.2. Research Procedure

The Poultry-BS probiotic formulation integrates a synergistic blend of natural ingredients, comprising molasses, Javanese ginseng, turmeric, tofu dregs, papaya leaves, dragon fruit, and Moringa leaves, supplemented with mango and orange fruits. These components were inoculated with a Lactic Acid Bacteria (LAB) starter through a seven day anaerobic fermentation process. Following incubation, the final product was filtered to obtain a probiotic filtrate, which was subsequently applied according to the designated treatment dosages. For sampling and slaughtering, broilers were fasted for approximately 6 hours to empty the digestive tract and minimize carcass contamination risks. Slaughtering was performed according to USDA guidelines by severing the jugular vein and carotid artery.

2.3. Variabels Evaluated

The variables observed in this study were as follows:

- Carcass Weight (g)
  Carcass weight obtained from heavy cut after expenditure blood, extraction hair, separation head, feet and removal of internal organs.
- Percentage Of Commercial Carcasses
  Percentage of breast, back, wing, thigh, and drumstick, with percentage values calculated using the following formula:

$$Carcass\ part\ weight\ (\%) = \frac{Carcass\ part\ weight\ (g)}{Carcass\ weight\ (g)} x\ 100\%$$

2.4. Data Analysis

The data obtained in this study were analyzed using analysis of variance (ANOVA) based on a Completely Randomized Design (CRD). If the analysis showed significant differences among treatments ($P<0.05$), the data were further analyzed using Duncan's Multiple Range Test (DMRT) at a 5% significance level to determine differences between treatment means.

3. Experimental Findings

Research result about giving probiotics *Poultry-BS* through drinking water to percentage piece commercial broiler carcasses are presented in Table 1.

Table 1 Probiotics *Poultry-BS* through drinking water to percentage piece commercial carcass broiler

Variables	Treatment				SEM[1)]
	0%	0.25%	0.50%	0.75%	
Carcass weight (g/head)	1152.80[a2)]	1175.40[a]	1098.40[a]	1090.40[a]	27.72
Breast percentage (%)	39.93[a]	39.72[a]	41.14[a]	40.67[a]	1.02
Back percentage (%)	21.22[a]	19.67[a]	20.53[a]	19.46[a]	0.95
Thigh percentage (%)	16.22[a]	16.59[a]	15.18[a]	15.88[a]	0.52
Drumstick percentage (%)	12.54[a]	13.36[a]	13.13[a]	13.52[a]	0.62
Wing percentage (%)	10.09[a]	10.66[a]	10.02[a]	10.47[a]	0.46

Note : 1) Standard error of the mean. 2) Means within the same row with the same superscript letters are not significantly different. ($P>0.05$).

Dietary inclusion of Poultry-BS at concentrations ranging from 0.25% to 0.75% failed to significantly alter ($P>0.05$) the proportion of commercial breast cuts when evaluated against the baseline treatment. The absence of significant differences in breast percentage across treatments is likely because the basal ration used had optimally met the broiler's nutrient requirements, so Poultry-BS supplementation as a feed additive did not provide a substantial additional effect on breast muscle tissue deposition. Besides nutritional factors, broiler breast muscle growth is strongly influenced by genetics and harvest age, making the carcass proportion distribution relatively stable. Probiotics play a more significant role in increasing nutrient utilization efficiency and intestinal health rather than altering the percentage distribution of specific carcass cuts. This is in line with [9], who reported that multi-strain probiotic inclusion in broilers did not significantly affect ($P>0.05$) commercial pieces or the percentage of major carcass cuts, including the breast, despite improvements in gut microflora and nutrient efficiency. Similar results were also reported by [10], showing that the breast percentage of broilers given natural probiotics fell within a relatively uniform range and did not differ significantly from the control. [11] confirmed that local probiotic administration to broilers had no significant effect on carcass cut percentages, including the breast, when the basal ration already met the broiler's nutrient needs.

The commercial cut percentage of the broiler back treated with levels of 0.25% (P1), 0.5% (P2), and 0.75% (P3) was not significantly lower than the P0 treatment. This lack of significant difference in breast and back percentages between treatments is also related to the fact that the same ration was provided to all groups. Consequently, the intake of major nutrients for muscle and skeletal tissue formation such as protein, energy, calcium, and phosphorus was at the same level. The broiler's back is dominated by bone tissue with relatively low muscle content, making it less responsive to functional nutritional treatments like probiotics. Furthermore, by the harvest age of 30 days, skeletal growth has relatively stabilized, so probiotic supplementation does not significantly influence the back proportion. Probiotics act more in enhancing the metabolism of soft tissues rather than changing skeletal tissue proportions, thus the back percentage remains relatively unchanged across treatments. These findings are consistent with several previous studies showing that the use of probiotics or functional feed additives does not significantly affect the back percentage of broilers. [12] reported that probiotic and synbiotic supplementation in broilers generally has no significant effect on carcass characteristics and major carcass cut distribution, even though it can enhance gut health and growth performance. According to [13], probiotic administration to broilers does not cause changes in the distribution of carcass cuts (breast, back, and wings), although it improves the growth performance of the birds. According to research, the back percentage of broilers receiving probiotics through drinking water ranged from 19.88% to 20.95% and was not significantly different across treatments, indicating that probiotic supplementation does not significantly affect the back percentage as shown by [14]. Furthermore, [15] emphasized that the primary role of probiotics is related to

improving digestive tract health and metabolic efficiency, whereas their impact on structural carcass proportion changes, such as the back, is relatively limited.

The commercial cut percentages of the thigh and drumstick statistically showed no significant differences (P>0.05) compared to the P0 treatment. Numerically, the drumstick percentage in the P1 treatment tended to be higher than P0, but the difference was not large enough to produce a statistically significant result. Generally, the percentage distribution of carcass cuts, including the thigh and drumstick, was relatively uniform across treatments. This indicates that Poultry-BS probiotic administration has not yet exerted a significant influence on the proportion of broiler thigh parts. These results align with [15], who reported that probiotic supplementation in broilers did not significantly influence carcass characteristics and commercial cut percentages (P>0.05), despite improvements in gut microflora and nutrient utilization efficiency. Such conditions suggest that enhanced digestive function due to probiotics is not always followed by changes in carcass part percentage distribution. [16] also stated that probiotics based on natural materials can increase digestive efficiency and nutrient utilization without altering the percentage distribution of carcass cuts. Conceptually, [10] explained that the proportions of the thigh and drumstick in broilers are related to overall carcass development; therefore, when carcass growth is relatively uniform, the percentage distribution of thigh cuts tends to be stable and shows no significant difference.

The commercial cut percentage of the broiler wings receiving Poultry-BS probiotic at levels of 0.25% (P1), 0.5% (P2), and 0.75% (P3) showed no significant difference (P>0.05) compared to the treatment without probiotics (P0). The absence of significant differences in wing percentage between treatments is related to the uniformity of the ration provided during the study. The basal ration, which was isoenergetic and isoproteic, meant that the intake of major nutrients specifically protein and energy was relatively similar for all treatments, resulting in proportional carcass tissue growth distribution. Additionally, the broiler's wing is dominated by bone tissue with a relatively lower muscle proportion compared to the breast and thigh, so its response to probiotic supplementation tends to be limited. This is supported by [8], who reported that giving *Probio-Bali Tani* probiotic up to a level of 0.1% had no significant effect on broiler wing percentage, which ranged from 9.85–10.72%. Similar results were reported by [17] in KUB chickens, where wing percentages ranged from 9.40–10.31% and were not significantly different across functional ration treatments. [18] also stated that probiotic drink supplementation did not result in significant differences in wing percentage despite numerical variations. These findings are consistent with the report by [9], which showed that commercial probiotic supplementation did not significantly affect carcass cut distribution, including wings. [13] reported that increased digestive efficiency due to probiotics is not always followed by changes in carcass tissue distribution. Poultry-BS probiotic plays a role in improving gut microflora balance and increasing nutrient utilization efficiency without directly affecting the growth distribution in specific body parts. [19] stated that the main effect of probiotics in poultry is the improvement of digestive health and metabolic efficiency. These results are in line with the study by [5], which reported that EM-4 probiotic improved broiler performance without significantly changing carcass cut percentages. The study by [9] also indicated that while growth performance improved, the distribution of carcass cuts remained relatively constant.

4. Conclusion

Giving probiotics *Poultry-BS* through drinking water at levels of 0.25%, 0.5%, and 0.75% not influential to percentage piece commercial broiler carcass.

Compliance with ethical standards

Acknowledgments

The author wishes to express sincere gratitude to the Dean of the Faculty of Animal Science at Udayana University. The completion of this research was made possible through the comprehensive academic and institutional support provided by the faculty during the study's execution

Disclosure of conflict of interest

Regarding potential conflicts of interest, the author confirms the absence of any personal or financial affiliations that could have biased the study's methodology, results, or final interpretation.

Statement of ethical approval

The experimental procedures involving broiler chickens in this research received formal endorsement from the Animal Ethics Committee within Udayana University's Faculty of Veterinary Medicine. All protocols were conducted in strict adherence to the committee's approved ethical guidelines

References

[1] National Research Council. (1994). *Nutrient Requirements of Poultry* (9th rev. ed.). Washington, DC: National Academy Press.

[2] Regulation of the Minister of Agriculture of the Republic of Indonesia No. 14/PERMENTAN/PK.110/2/2017 concerning the Classification of Veterinary Drugs.

[3] Bidura, I. G. N. G., and Suastina, I. P. (2002). **Utilization of Probiotics in Animal Feed**. Udayana University Denpasar.

[4] Mountzouris, K. C., et al. (2007). Evaluation of the efficacy of a probiotic containing *Lactobacillus*, *Bifidobacterium*, and *Enterococcus* on broiler performance. *Poultry Science*, 86(2), 309–317.

[5] Wiryawan, K. G., Mujnisa, A., and Sumiati. (2005). Performance of broiler chickens fed with EM-4 probiotics. Journal of Animal and Veterinary Science.

[6] Madanugrahaya, M. R. T., Tampa, N. P. G., Dwipayana, K. A., & Arisa, N. M. P. (2024). Development of Poultry-BS probiotic as a bio-supplement for poultry. Student Entrepreneurship Development Program (SEDP) Report.

[7] Anabokay, R. L., Mudita, I. M., & Siti, N. W. (2024). Effect of probiotics on the digestive organ weight of broiler chickens. Journal of Animal Science.

[8] Ratnadewi, N. K. A., Siti, N. W., and Candrawati, D. P. M. A. (2024). Effectiveness of Probio Bali-Tani on broiler carcass quality. Proceedings of the National Animal Science Seminar.

[9] Mountzouris, K. C., Tsirtsikos, P., Palamidi, I., Arvaniti, A., Mohnl, M., Schatzmayr, G., & Fegeros, K. (2010). Effects of probiotic inclusion levels in broiler nutrition on growth performance, nutrient digestibility, cecal microbiota composition, and in-feed probiotic survivability. Poultry Science.

[10] Hartono, M., Kurtini, T., & Septian, P. D. (2020). Effect of probiotic supplementation levels on the performance and carcass characteristics of broiler chickens. Indonesian livestock journal

[11] Kertiyasa, I. K. Y., Mahardika, I. G., and Mudita, I. M. (2020). Evaluation of local probiotic administration on carcass percentage and carcass parts of broilers. Journal of Animal Science.

[12] Abd El-Hack, M. E., M. T. El-Saadony, M. E. Shafi, S. Y. A. Qattan, G. E. Batiha, A. F. Khafaga, A. E. Abdel-Moneim, and M. Alagawany. 2020. Probiotics in poultry feed: A comprehensive review. Journal of Animal Physiology and Animal Nutrition, 104(6), 1835–1850.

[13] Pelicano, E. R. L., P. A. de Souza, H. B. A. de Souza, A. Oba, E. A. Norkus, L. M. Kodawara, and T. M. A. de Lima. 2003. Effect of different probiotics on broiler carcass and meat quality. Revista Brasileira de Ciência Avícola, 5(3), 207–214.

[14] Artha, N.I.P., S. Suharti, and A. Widiastuti. 2020. The effect of probiotics on the performance and carcass characteristics of broiler chickens. Tropical Animal Husbandry Journal, 8(2), 45–52.

[15] Sugiharto, S., T. Yudiarti, I. Isroli, E. Widiastuti, and F. D. Putra. 2017. Effect of dietary supplementation with Rhizopus oryzae or Chrysonilia crassa on growth performance, blood profile, intestinal microbial population, and carcass traits in broilers exposed to heat stress. Archives of Animal Breeding, 60(3), 347–356.

[16] Jaelani, A., Susanti, S., and Wisri, I. (2014). The effect of probiotic use in rations on broiler carcass quality. Journal of Animal Science.

[17] Damanik, M. R., N. W. Siti, and N. M. S. Sukmawati. 2022. The effect of replacing commercial rations with bread waste on commercial cuts of superior native chicken carcasses from Balitnak (KUB). Tropical Animal Husbandry Journal, 10(2), 450–467.

[18] Surtina, D., and M. R. Sari. 2020. The effect of providing probiotic drinks on live weight, carcass percentage, and income over feed cost (IOFC) of broilers. Mahaputra Animal Husbandry Journal, 1(1), 1–7.

[19] Kompiang, I. P. (2009). Utilization of microbes as probiotics to improve poultry production in Indonesia. Jurnal Litbang Pertanian.