BROODING PERFORMANCE OF PHILIPPINE NATIVE CHICKEN SUPPLEMENTED WITH MORINGA (*Moringa oleifera* Lam.) AND HOT RED PEPPER (*Capsicum annum* L.) AS MINERAL AND VITAMIN PREMIX

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ABSTRACT

The study was conducted from February 21 to March 14, 2018 at CPU-CARES Research and Development Learning Center, Jaro, Iloilo City. The study was conducted to determine the brooding performance of Philippine native chicken supplemented with moringa (*Moringa oleifera* Lam.) and hot red pepper (*Capsicum annum* L.) as mineral and vitamin premix. The treatments were composed of the different inclusion levels of powder mixture in CPU-booster feeds which included 0.40%, 0.60%, 0.80% and 1.00% of combined moringa leaf powder (MOLP) and hot red pepper powder (HRPP). Pure CPU-booster feeds and diet with 0.30% of synthetic mineral and vitamins premix were used as control treatments. These were laid out in a completely randomized block design (CRD) with 3 replications. Differences among treatments on the feed intake, liveweight gain, feed efficiency, and survival rate of chicks were analyzed using analysis of variance. The linear association between the inclusion levels of plant powder mixture and mortality rate of chicks was estimated and its degree of association was measured using simple linear correlation and regression analysis. Stepwise regression analysis was used to determine which of the examined nutrients of the experimental feeds are associated with mortality rate. Results of the study revealed that increasing the inclusion level of plant powder mixture from 0.40% to 1.00% in the formulation of feed did not significantly enhance the chicks' performance in terms of live weight gain, feed efficiency and survival rate and were

comparable with the control treatments. However, a linear trend was observed between inclusion levels of plant powder mixture and percent mortality of chicks. The linear relationship between inclusion level of powder mixture and mortality had estimated that percent mortality among chicks increased by 7.99% for every gram of powder mixture included in a kilogram of CPU-booster feeds. The predictor of mortality rate relative to the experimental diets was its brix which was reduced as inclusion levels of powder mixture were increased.

REFERENCES

Ademola, S. G. (2006). Performance of the laying birds fed diets containing forage meal of *Tithonia diversifolia* and antibiotics. *Nigeria Journal Animal Production*, 33, 58–68. Retrieved from https://eurekamag.com/research/004/522/004522200.php

Afolabi, K., Ndekejwute, E. K., & Rotimi, O. (2007). Hot Red Pepper (*Capsicum annum* L.) meal enhanced the immunity, performance and economy of broilers fed in phases. *Journal of Biology, Agriculture and Healthcare*, 7(8), 1-7. Retrieved from www.iiste.org.

Ajantha, A., Kathirvelan, C., Purushothaman, M. R., & Visha, P. (2018). Study on nutrients, mineral and vitamin profile of *Moringa oleifera* Lam. leaf meal. *International Journal of Current Microbiology & Applied Sciences*, 7(5), 2478-2481. doi:https://doi.org/10.20546/ijcmas.2018.705.284

Alkali, J. S., Kucha, C. T. & Rabiu, I. A. (2015). Effect of drying temperature on the nutritional quality of *Moringa oleifera* Lam. leaves. *African Journal of Food Science*, 9(7), 395-399. doi:10.5897/AJFS2014.1145

Al-Kassie, G. A. M. A., Butris, G. Y., & Ajeena, S. J. (2012). The potency of feed supplemented mixture of hot red pepper and black pepper on the performance & some hematological blood traits in broiler diet. *International Journal of Advanced Biological Research*, 2(1), 53-57. Retrieved from https://www.semanticscholar.org/paper/The-Potency-of-Feed-Supplemented-Mixture-of-Hot-Red-Al-Kassie-Butris/e5c31b7406464af7a56a016d19916a1eb0eeafb4

Asaduzzaman, M., Jahan, M. S., Mondol, M. R., Islam, M. A., & Sarkar, A. K. (2005). Efficacy of different commercial vitamin-mineral premixes on productive performance of caged laying pullets. *International Journal of Poultry Science*, 4(8), 589-595. Retrieved from https://www.researchgate.net/publication/26557719_Efficacy_of_Different_Commercial_Vitamin_-_Mineral_Premixes_on_Productive_Performance_of_Caged_Laying_Pullets

Banjo, S. (2012). Growth and performance as affected by inclusion of *Moringa oleifera* Lam. leaf meal in Broiler chicks diet. *Journal of Biology, Agriculture and Healthcare*, 2(9), 35-38. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.870.6078&rep=rep1&type=pdf

Blair, R. (2018). Nutrition and feeding of organic poultry (2nd ed.). Boston, *MA: CAB International*. Retrieved from https://books.google.com.ph/books?id=LchwDwAAQBAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

El-Deek, A. A., Al-Harthi, M. A., Osman, M., Al-Jassas, F., & Nassar, Rehab. (2011). Hot pepper (*Capsicum annum* L.) as an alternative to oxytetracycline in broiler diets and effects on productive traits, meat quality, immunological responses and plasma lipids. *Arch.Geflügelk*, 76(2), 74-80. Retrieved from https://www.european-poultry-science.com/Hot-pepper-span-classws-name-Capsicum-Annumspan-as-an-alternative-to-oxytetracycline-in-broiler-diets-and-effects-on-productive-traits-meat-quality-immunological-response,QUIEPTQyMjA3NjUmTUIEPTE2MTAxNA.html

(2016). Enhancing the potentials of the Philippine Native Chicken through S&T. *DOST-PCAARRD*. Retrieved from http://www.pcaarrd.dost.gov.ph/home/portal/index.php/quick-information-dispatch/2675-enhancing-the-potentials-of-the-philippine-native-chicken-through-s-t

El Husseiny, O., Shalash, S.M. & Azouz, H.M. (2002). Response of broiler performance to diets containing hot pepper and/or fenugreek at different metabolizable energy level. Egypt Poult. Sci. (11): 387-406. Retrieved from https://pdfs.semanticscholar.org/8e9a/ba805e9708f14675649970235ac88d14414f.pdf

Faria F. D. E., Rosa P. S., Viera B. S., Macari M., & Furlan R. L. . (2005). Protein levels and environmental temperature effects on carcass characteristics, performance, and nitrogen excretion of broiler chickens from 7 to 21 days of age. Brazilial *Journal of Poultry Science*, 7(4), 247–253. doi:http://dx.doi.org/10.1590/S1516-635X2005000400009

Gadzirayi, C. T. (2014). Feed intake and growth performance of indigenous chicks fed diets with *Moringa oleifera* Lam. leaf meal as a protein supplement during early brooding stage. *International Journal of Poultry Science*, 13(3), 145-150. Retrieved from https://scialert.net/abstract/?doi=ijps.2014.145.150

G. G. Mateos, E. Jiménez-Moreno, M. P. Serrano, & R. P. Lázaro, Poultry response to high levels of dietary fiber sources varying in physical and chemical characteristics, The Journal of Applied Poultry Research, Volume 21, Issue 1, Spring 2012, Pages 156–174, https://doi.org/10.3382/japr.2011-00477

Hernandez, F., Madrid, J., Garcia, V., Orengo, J., & Megias, M. D. (2004). Influence of two plant extracts on broilers performance, digestibility, and digestive organ size. *Poultry Science*, 83(2), 169-74. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/14979566

Iguro, R. U. (2014). An assessment of the use of varying levels of *Moringa oleifera* Lam. leaf meal as a substitute for vitamin+mineral premix in finisher broiler diet. *Journal of Experimental Research*, 2(2), 88-92. Retrieved from www.er.journal.com

Kakengi, A. M. W., Kaijage, J. T., Sarwatt, S. V., Mutayoba, S. K., Shem, M. N., & Fujihara, T. (2007). Effect of *Moringa oleifera* Lam. leaf meal as a substitute for

sunflower seed meal on performance of laying hens in Tanzania. *Livestock Research for Rural Development*, 19(8). Retrieved from http://www.lrrd.org/lrrd19/8/kake19120.htm

Kakenji, A. M., Shem, M. N., Sarwatt, S. V., and Fujihara, T. (2005). Can *Moringa oleifera* Lam. be used as a protein supplement for ruminants? *Asian-Aust. Journal of Animal Science*, 18(1), 42-47. Retrieved from https://www.ajas.info/upload/pdf/18_9.

Mohamed, S. A.-T. (2014). Response of broiler chicken to diets containing different mixture powder levels of red pepper and black pepper as natural feed additive. *Animal and Veterinary Sciences*, 2(3), 81-86. Retrieved from (http://www.sciencepublishinggroup.com/j/avs

Moradi, S., Mousavinia, M., & Galeh, A. (2016). Effect of use black and red pepper powder as feed additive on performance and some immune parameters of cobb 500 broiler chicks. *CIBTech Journal of Zoology*, 5(2), 45-50. Retrieved from http://www.cibtech.org/cjz.htm

Ocampo, V. (2016). Chicken industry performance report. *Philippine Statistics Authority*. Retrieved from https://psa.gov.ph/content/chicken-industry-performance-report-2

Onunkwo, D. N. (2015). effects of *Moringa oleifera* Lam. leaf meal on the growth performance and carcass characteristics of broiler birds. *Journal of Agriculture and Veterinary Science*, 8(3), 63-66. Retrieved from www.iosrjournals.org

Paguia, M. H., *Paguia*, R. Q., Balba, C., & Flores, R. C. (2014). Utilization and evaluation of *Moringa oleifera* Lam. as poultry feeds. *APCBEE Procedia* , 343-347. doi:doi: 10.1016/j.apcbee.2014.03.051

Pordesimo, H. L. L., Igathinathane, C. & Vinyard, B. (2009). Physical property effects on drying of chile peppers. *International Journal of Food Properties*, 12, 316–330. Retrieved from https://www.tandfonline.com/doi/pdf/10.1080/10942910701689796

Shaha, R. K., Rahman, S., & Asrul, A. (2013). Bioactive compounds in chilli peppers (*Capsicum annuum* L.) at various ripening (green, yellow and red) stages. *Annals of Biological Research*, 4(8), 27-34. Retrieved from http://www.academia.edu/download/32579655/Bioactive_compounds_in_chilli_peppers_(Capsicum_annuum_L.)_at_various.pdf

Shahverdi, A., Kheiri, F, Faghani, M., Rahimian, Y., & Rafiee, A. (2013). The effect of use red pepper (*Capsicum annum L.*) and black pepper (*Piper nigrum L.*) on performance and hematological parameters of broiler chicks. *European Journal of Zoological Research*, 2(6), 44-48. Retrieved from https://www.researchgate.net/publication/275712770_The_effect_of_use_red_pepper_Capsicum_annum_L_and_black_pepper_Piper_nigrum_L_on_performance_and_hematological_parameters_of_broiler_chicks

Tazi, S. M. (2014). Effect of feeding different levels of moringa oleifera leaf meal on the performance and carcass quality of broiler chicks. *International Journal of Science and Research*, 3(5), 147-151. Retrieved from www.ijsr.net

Umar, Y. B., Isyaku, A. H., Mohammed-Dabo, I. A., Bilal, S., Mashi, A. H., & Adamu, M. S. (2015). Effects of drying technique on the nutrients of *Moringa oleifera* Lam. leaves. Department of Chemical Engineering, 1-6. Retrieved from http://www.academia.edu/27205359/EFFECT_OF_DRYING_TECHNIQUES_ON_THE_NUTRIENTS_OF_MORINGA_LEAVES