



UNIVERSITI  
TEKNOLOGI  
MARA

Pusat  
Asasi



# CREATIONS de UiTM

MEGA INNOVATION CARNIVAL 2020  
*For Knowledge and Humanity*

---

## PROCEEDING BOOK

6 - 8 MARCH 2020

CENTRE OF FOUNDATION STUDIES  
UNIVERSITI TEKNOLOGI MARA  
CAWANGAN SELANGOR KAMPUS DENGKIL



STRATEGIC PARTNER



SPONSOR



PETRONAS

## Feed Formulation in Chicky Crunch Production

Nur Athirah Muhamad Rushdi, Nur Aishah Amira Md Lazim, Nik Nur Hasnavyra Afiha Nik Hasnusi, Siti Noor Syuhada Muhammad Amin, Nurul Najidah Mohamed\*

UniSZA Science and Medicine Foundation Centre, Universiti Sultan Zainal Abidin, Gong Badak Campus, 21300 Kuala Nerus, Terengganu, Malaysia

\*Email: nurulnajidah@unisza.edu.my

### ABSTRACT

It is essential to provide chickens with feeds that can contribute to their optimum health to breed a healthy chicken. However, some of the commercial chicken feeds available in the market have issue with their Halal status. The ingredients might contain enzymes that originated from the swine's stomach. Besides that, harmful chemicals such as roxarsone are added as the food additives because the feed's formulation lacks in nutrients. These two issues are the major concerns in the commercial chicken feeds. Thus, a new formulation of chicken feed, "**Chicky Crunch**" is introduced to overcome problems in the commercial chicken feed. The main ingredients in Chicken Crunch are made up from the waste materials such as palm kernel cake, rice bran, eggshell and bitter bean weed. Palm kernel cake is a good source for protein while rice bran and eggshell are the source for the carbohydrate and calcium, respectively. Apart from that, nutrients from bitter bean weed offer a good immunisation boost for the chicken. Hence, these ingredients will nourish the chicken with all the diets needed. The process of making the Chicky Crunch involves the blending of all the materials, kneading the blended materials and drying under the sun. The chicken feed was then tested to a group of chicks to see their growth's effect. The well-fed chicks grew healthier after a few weeks. In conclusion, this new feed formulation brings a solution in creating an alternative chicken feed that is free from harmful chemicals, rich with indispensable nutrients and most importantly contains Halal materials.

**Keywords:** Chicken feed; palm kernel cake; waste material; halal; nutritious

### 1. INTRODUCTION

The broiler industry in Malaysia is growing rapidly to keep the demand for the chicken's meat every year. Based on the statistic from the Department Veterinary Services, the production of chicken's meat in Malaysia is increased from 1664.9 million in year 2017 to 1707.6 million in 2018 and it is expected to keep increasing in year 2020 [1,2]. However, the broiler industry faces a heavy challenge because of some issues related to the chicken feed.

In Malaysia, a lot of issues had arisen regarding the Halal integrity of chicken feed. To build a Halal supply chain from animal-based product, the source of the animal feed should be Halal first, besides having proper slaughterhouse and proper segregation. In September 2017, a newspaper in Malaysia,

Harian Metro posted about the use of enzyme originated from the swine in chicken feed. Meanwhile, a research done by Khattak et al., in 2011 shows that pepsin or protease enzymes can be extracted from the swine's stomach [3,4]. These enzymes are needed to be added in poultry feed to increase the protein content in feed. The commercial chicken feeds in Malaysia do not specified in detail the type of enzymes used in the production. Hence, it arose a suspicious thought among the buyers and weaken the Halal integrity of the livestock to be commercialized for their poultry meat and eggs.

The ingredients in commercial chicken feed consist of 19-17% of protein from animal protein, 5% of fibre from corn, soybean, or other types of grains, minerals and additives [5]. The additives used in chicken feed is synthetically produced from few types of chemical, including a harmful chemical [6]. The function of the additives is to boost the chicken muscle and improve the pigmentation in meat because the formulation of chicken feed lacks in nutrients. But the use of harmful chemicals, such as roxarsone, might led to the negative side effect to those who consumed the chicken's meat.

In addition to that, the raw ingredients for animal feeds including the feeds for chicken are imported from abroad. In 2015, Malaysia imported about 3.5 million metric ton corn from Argentina to support the broiler industry. However, the process needs a high cost of budget to keep sustained [7].

Therefore, to overcome these problems, a new chicken feed is produced by using a healthy and Halal materials. The product is branded as Chicky Crunch which uses a special formulated feed that made up from Halal and low cost of materials. Chicky Crunch provide full nutrients needed for chicken.

## **2. INNOVATION DEVELOPMENT**

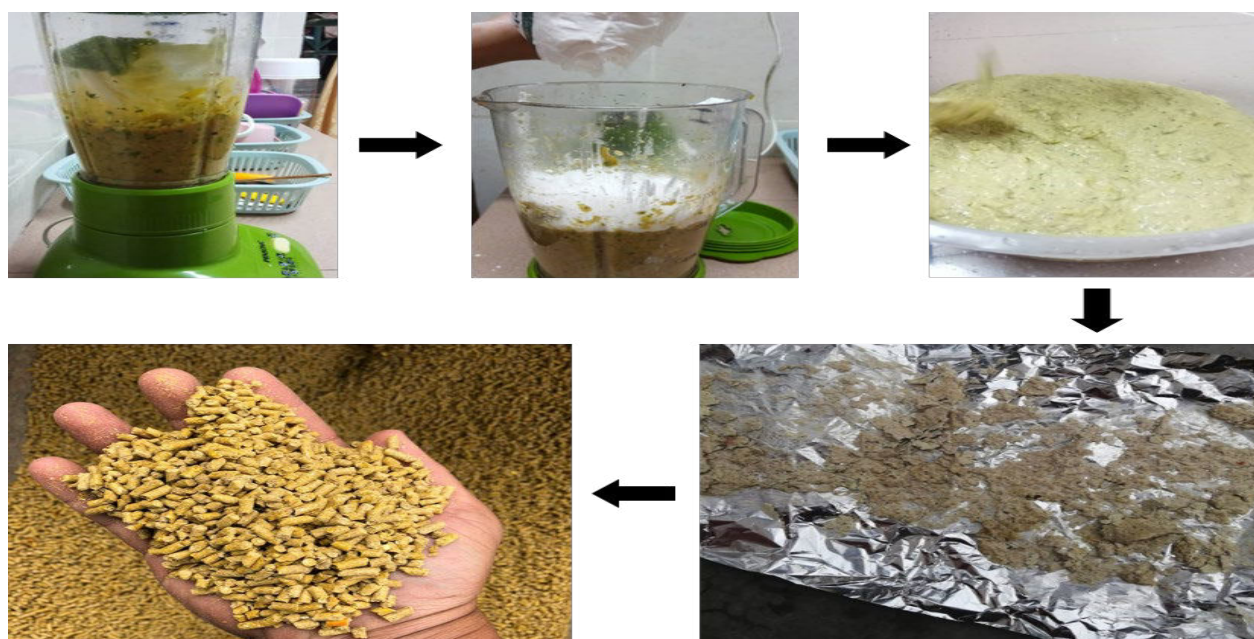
The formulation of Chicky Crunch is developed from palm kernel cake, rice bran, eggshell and bitter bean weed. The percentage of these mixtures in the formulation of Chicky Crunch are fixed to 33.3 % of palm kernel cake, 33.3% of rice bran, 16.7 % of eggshell and 16.7 % of bitter bean weed. Figure 1 shows the images of the materials used in the product formulation. Palm kernel cake, rice brain and the eggshell are the waste products. The palm kernel cake is the by-product produces during palm kernel crushing process. It is a good source for protein and high in fibre. Meanwhile, both rice bran and eggshell are used as the source for the carbohydrate, fibre and calcium. On the other hand, bitter bean weed is a non-edible fruit. People do not consume bitter bean weed because of the bean size is too small. However, it has ample of nutrients and vitamins that needed in chicken feed.





**Figure 5:** The images of (a) palm kernel cake (b) rice bran (c) bitter bean weed (d) eggshell

The steps in processing Chicky Chrunch is shown in Figure 2. It begins with the blend of all the materials using a mixer, followed by the addition of tapioca starch until the mixture formed a doughy texture that could be easily knead by hand. After kneading, it was then placed on aluminium foil to dry under the sunlight until the doughy texture was no longer sticky. The mixture was then compressed to form a pellet.



**Figure 6:** The flowchart shows the process in producing Chicky Chrunch

### 3. COMMERCIAL POTENTIAL

Chicky Crunch has a potential to be commercialized as an alternative to the commercial chicken feed in market because the cheap production cost and the materials used are rich with nutritional values, free from chemicals and Halal. The commercialization of Chicky Crunch will benefit the broiler and poultry industry in Malaysia.

### 4. CONCLUSION

In conclusion, providing a healthy chicken is an aspect that holds an important role in producing a healthy chicken's meats and eggs for human diet. However, the breeding of a healthy chicken does not depend solely on their hygiene routine, but it also coming from the goodness of the foods that they took. It is essential to provide chickens with feeds that can contribute to their optimum health. Thus, Chicky Crunch could be a good alternative as chicken feed because it formulated with a highly nutritious and Halal ingredient.

### ACKNOWLEDGEMENT

The authors thanks to UniSZA for providing the funding.

### REFERENCES

- [1] Department of Veterinary Services Malaysi. (2018). February 13, 2020, from [http://www.dvs.gov.my/dvs/resources/user\\_1/2019/BP/Perangkaan%20Ternakan/3.\\_Msia\\_\\_Perangkaan\\_ternakan\\_M\\_Surat\\_1-15\\_.pdf](http://www.dvs.gov.my/dvs/resources/user_1/2019/BP/Perangkaan%20Ternakan/3._Msia__Perangkaan_ternakan_M_Surat_1-15_.pdf).
- [2] Bahri, S. I. S., Ariffin, A. S. & Mohtar, S. (2019). Critical review on food security in Malaysia for broiler industry. *International Journal of Academic Research in Business & Social Sciences*. 9 (7), 869-876. <http://dx.doi.org/10.6007/IJARBSS/v9-i7/6186>.
- [3] Khattak, J. Z. K., Anwar, Z., Wahedi, H. M., Abbas, G. Khattak, H. Z. K. & Ismatullah, H. (2011). Concept of Halal food and biotechnology. *Advance Journal of Food Science and Technology*. 3 (5), 385-389.
- [4] Ashraf, A., Abd Rahman, F. & Abdullah, N. (2017). Poultry feed in Malaysia: an insight into Halalan Toyyiban issues. In: Muhammad Hashim N., Md Shariff N., Mahamood S., Fatullah Harun H., Shahrudin M. & Bhari A. (eds), *Proceedings of the 3<sup>rd</sup> international halal conference (INHAC 2016)* (pp. 511-531). [https://doi.org/10.1007/978-981-10-7257-4\\_45](https://doi.org/10.1007/978-981-10-7257-4_45)/ Springer.
- [5] Loh, T. C. *Livestock production and the feed industry in Malaysia. Protein Sources for the Animal Feed Industry* (pp. 329-339). <http://www.fao.org/tempref/docrep/fao/007/y5019e/y5019e18.pdf>.
- [6] Aghajani, M. & Amiri, F. H. (2013). The effect of roxarsone as an organoarsenical poultry feed additive. *Australian Journal of Basic and Applied Sciences*. 7 (2), 190-196.
- [7] Zulkifli Idrus. (2016). Towards cheaper poultry feed. February 13, 2020 from <https://www.thestar.com.my/opinion/letters/2016/11/15/towards-cheaper-poultry-feed/>.



## **CREATIONS de UiTM**

MEGA INNOVATION CARNIVAL 2020  
*For Knowledge and Humanity*

---

CENTRE OF FOUNDATION STUDIES  
UNIVERSITI TEKNOLOGI MARA  
CAWANGAN SELANGOR KAMPUS DENGKIL

ISBN 978-967-17072-4-1



9 789671 707241