

## Improving the Quality and Nutrient Content of Palm Kernel Cake through Fermentation with *Bacillus subtilis*

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**Abstract :** Background and Objective: Palm kernel cake (PKC) is a waste of the palm oil industry. Indonesia, as the largest palm oil producer in the world, produced 45-46% palm kernel cake. Palm kernel cake can potentially be used as animal ration but its utilization for poultry is limited. Thus, fermentation process was done in order to increase the utilization PKC in poultry ration. An experiment was conducted to study the effect between Inoculum Doses with *Bacillus subtilis* and fermentation time to improve the quality and nutrient content of fermented Palm Kernel Cake. Material and Methods: 1) Palm kernel cake derived from Palm Kernel Processing Manufacture of Andalas Agro Industry in Pasaman, West Sumatra. 2) *Bacillus subtilis* obtained from The Research Center of Applied Chemistry LIPI, Bogor. 3) Preparations nutrient agar medium (NA) produced by Difco - Becton Dickinson. 4) Rice bran 5) Aquades and mineral standard. The experiment used completely randomize design (CRD) with 3 x 3 factorial and 3 replications. The first factors were three doses of inoculum *Bacillus subtilis*: (3%), (5%), and (7%). The second factor was fermentation time: (1) 2 day, (2) 4 day, and (3) 6 day. The parameters were crude protein, crude fiber, nitrogen retention, and crude fiber digestibility of fermented palm kernel cake (FPKC). Results: The result of the study showed that there was significant interaction ( $P < 0.01$ ) between factor A and factor B and each factor A and B also showed significant effect ( $P < 0.01$ ) on crude protein, crude fiber, nitrogen retention, and crude fiber digestibility. Conclusion: From this study, it can be concluded that fermented PKC with 7% doses of *Bacillus subtilis* and 6 days fermentation time provides the best result as seen from 24.65% crude protein, 17.35% crude fiber, 68.47% nitrogen retention, 53.25% crude fiber digestibility of fermented palm kernel cake (FPKC).

**Keywords :** fermentation, *Bacillus Subtilis*, inoculum, palm kernel cake, quality, nutrient

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