BROILER FEED COMPOSITION CONTAINING MUNGBEAN (*Vigna radiata*) REJECT MEAL

TECHNICAL FIELD OF THE UTILITY MODEL

This utility model relates to livestock nutrition, specifically poultry feed compositions. It focuses on the incorporation of mungbean reject meal into broiler feed to enhance growth performance and feed efficiency while lowering production cost.

BACKGROUND OF THE UTILITY MODEL

The increasing demand for high-quality protein sources in livestock nutrition is largely driven by the rising cost and limited availability of conventional feed ingredients, particularly soybean meal and fish meal. Commercial broiler feeds are especially dependents and vulnerable to global market fluctuations. A livestock production intensifies to meet the growing demand for animal-derived food, there is an urgent need to identify sustainable, cost effective, and locally available protein alternatoves (Makkar et al. 2014; FAO, 2019). This challenge has stimulated considerable research into novel feed sources- such as insect meals, agro-industrial by-products, and plant-based supplements- to improve the sustainability of animal feeding systems while reducing reliance on feed resource that compete with human food supply (van Huis et al., 2013; Tufarelli et al., 2021).

Among these alternatives, mungbean *(Vigna radiata)* emerges as a promising plant based protein source. With a protein content ranging from 22% to 25% (Miah et al., 2009), mungbean is widely cultivated across tropical and subtropical regions and serves as an essential dietary protein in many developing countries. In the Philippines, San Mateo, Isabela has been designated as the "Munggo Capital of the Philippines" through Administrative Order No. 23, Series of 2011, issued

by then-Agriculture Secretary Proceso J. Alcala. The municipality dedicates nearly 7,500 hectares to mungbean cultivation during the summer season, yielding an average of 800 to 1,000 kilograms per hectare (DA-RFO II, 2019). However, approximately 10% to 15% of each harvest consists of mungbean rejects-substandard or damaged seeds typically discarded or underutilized despite their substantial nutritional value.

These underutilized mungbean rejects retain considerable protein and energy content, positioning them as viable alternative feed ingedients. This utility model introduces a novel broiler feed composition that includes mungbean reject meal at an optimized level to achieve both economic and productive benefits. Mungbean reject—an agricultural by-product typically discarded—contains valuable nutrients that can be harnessed as a cost-effective feed ingredient. By harnessing this locally available agricultural by-product, the initiative promotes circular agriculture, adds value to farm residues, and contributes to more sustainable and climate-resilient poultry production systems.

Commercial broiler feeds rely heavily on conventional ingredients such as corn and soybean meal, which are becoming increasingly expensive.

SUMMARY OF THE UTILITY MODEL

The utility model provides a feed composition for broilers that includes 5% mungbean reject meal. This composition has been found effective in enhancing weight gain, improving feed efficiency, and maintaining meat quality without adverse effects on internal organs, based on histopathological evaluations.

DETAILED DESCRIPTION OF THE UTILITY MODEL

The present utility model relates to broiler feed composition containing mungbean (*Vigna radiata*) reject meal comprising: 5% Mungbean (*Vigna radiata*) reject meal (sundried and ground); 60–65% Corn or equivalent energy source; 20–25% Soybean meal or equivalent protein source; 3–5% Rice bran or alternative fiber source; 3–5% Vegetable oil (e.g., coconut or palm oil); 1.0–2.5% Vitamin-mineral premix; 1.0–1.5% Limestone; 0.3–0.5% Salt; 0.1–0.3% DL-Methionine and/or Lysine (as amino acid supplement); The mungbean rejects are collected, sundried, and ground to fine meal. All ingredients are thoroughly mixed to produce a uniform, homogenous broiler starter or finisher feed.

Commercial broiler feeds typically rely on high-cost protein sources such as soybean meal and fish meal. However, the increasing cost and limited local availability of these ingredients present significant challenges, particularly for smallholder poultry producers. At the same time, substantial volumes of mungbean rejects (i.e., cracked, undersized, or discolored seeds not fit for human consumption) are often discarded or underutilized. The technical problem addressed by this utility model is how to effectively incorporate mungbean reject meal into broiler feeds without compromising nutritional quality, thereby reducing feed costs and minimizing agricultural waste.

Previous broiler feed formulations have not utilized mungbean rejects as a functional protein ingredient. Most conventional feeds rely on more expensive and sometimes imported protein sources. While studies may have examined alternative legumes, the use of sun-dried, ground mungbean reject meal at a defined inclusion rate (5%) in a complete feed formula, as disclosed in this utility model, is novel and distinguishes itself from known formulations. Furthermore, this utility model promotes waste valorization, local resource utilization, and cost savings.

This broiler feed composition is applicable to both small-scale and commercial poultry production. It is especially beneficial for regions with significant mungbean processing activity, as it creates value-added use for rejects. The process requires only basic agricultural tools and can be adopted by feed millers, poultry raisers, cooperatives, and agricultural enterprises seeking to improve feed sustainability and reduce production costs.

Example of Preparation:

1) Collecting mungbean rejects from local processors,
2) Cleaning thoroughlythe mungbean rejects in step 1 to remove foreign matter,
3) Sundrying the mungbean rejects for 3 to 5 days until moisture content is reduced below 12%,
4) Grinding the dried mungbean rejects using commercial grinder until fine meal consistency is achieved,
5) Using a weighing scale, measure each component based on the composition stated above,
6) Mixing all dry ingredients (corn, soybean meal, mungbean reject meal, rice bran, limestone, salt, vitamin-mineral premix) using shovel for 10-15 minutes to ensure uniform blending,
7) Add vegetable oil and amino acid supplements gradually while mixing and continue for an additional 5 minutes, and
8) Packing and storing in a clean dry sack.