# EFFECT OF NUTRITIONAL EMULSIFIER ON FEED EFFICIENCY IN BROILERS FED DIETS BASED ON TWO DIFFERENT FAT COMPOSITIONS

M. ROVERS[1] and H. NAVARRO[2]

Energy is a major cost component in broiler diets and fats and oils are important energy sources. The digestibility of fat depends on different characteristics of the fat, like ratio unsaturated/saturated (U/S) fatty acids and level of free fatty acids (FFA) (Gu and Li, 2003). Nutritional emulsifiers can be used to improve fat digestibility and thus improve the energy efficiency and lower feed costs. It has been shown that a nutritional emulsifier with a very high hydrophilic-lypophilic balance (HLB) can improve fat digestibility and improve AME values in European diets (Maertens et al, 2013). A trial was designed to evaluate if this effect can be confirmed in diets with different fat sources, commonly used in Latin American diets.

The study was conducted at the experimental poultry farm of Integracion y Desarrollo Agropecuario, Michoacan, Mexico. The effect of a nutritional emulsifier was tested in two different diets. The ingredient composition of both diets was similar, except for the fat source. Diet 1 was based on yellow grease (blend of vegetable oils) with a U/S ratio of 2.1 and 12% FFA. Diet 2 was based on a mix of 20% palm and 80% acidulated soya oil with a U/S ratio of 3.0 and 48% FFA. The added fat was 3.9%, 5.5% and 5.15% of the diet and the calculated metabolizable energy was 12.34MJ, 12.87MJ and 13.08MJ in starter, grower and finisher diets respectively. Both diets were formulated with or without a nutritional emulsifier (Excential Energy Plus) at a dosing of 350 grams/MT in each phase. Each treatment had 450 birds (Ross 308) with 9 replicates of 50 birds per pen. The results were statistically analysed by factorial 2 x 2 ANOVA.

**Table 1 - Bodyweight (BW), Feed intake (FI) and Feed conversion ratio (FCR) for the period (d1-42).**

| | Emulsifier | BW | FI | FCR |
|---|---|---|---|---|
| Diet 1 | No | 2785 | 4796 | 1.748 |
| Diet 1 | Yes | 2828 | 4744 | 1.702 |
| Diet 2 | No | 2727 | 4671 | 1.738 |
| Diet 2 | yes | 2753 | 4640 | 1.710 |
| SEM | | 8 | 15 | 0.005 |
| *P values* | | | | |
| Diet type | | <0.001 | <0.001 | 0.949 |
| Emulsifier | | 0.003 | 0.070 | <0.001 |
| Interaction | | 0.413 | 0.647 | 0.275 |

Dietary supplementation of the emulsifier improved significantly bodyweight ($p = 0.003$) and feed conversion ($p < 0.001$) in both diet types. The improvement in feed conversion was 2.6% and 1.6% in diet 1 and diet 2, respectively.

These results support the hypothesis that a nutritional emulsifier may improve feed efficiency in broilers, moreover this was observed under different diet compositions. The practical application of this trial is that it shows a tool to improve feed efficiency that may lead to lower feed costs and more sustainable broiler production.

Gu X & Li G (2003) *An. Feed Sci. and Tech*. **109:** 151-170.

Maertens L, Segers L, Rovers M, van der Aa A & Leleu S (2013) *Proc. Eur. Symp. Poult. Nutr.* **19:** PP V-86.

[1] Orffa Additives B.V., Werkendam, The Netherlands; rovers@orffa.com

[2] Orffa Latin America/Excentials, Mexico DF, Mexico.