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The Effect of a Herbal Growth Promoter Feed Additive on Shrimp Performance

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Abstract: The consumer of seafood relates the potential development of animals to the constant use of commercial growth promoters. Nevertheless, nowadays with the development of nonantibiotic feed additives the animal performance has improved. Some phytogenic compounds have augmented animal production by reducing levels of pathogenic bacteria. The objective of the present study was to assess the use of Fortimax^{tm} as a natural phytogenic growth promoter in intensive shrimp production. Assessment was based on the performance of the animal when fed a commercial diet. With the phytogenical, shrimp weight and average daily gain were increased ($p<0.05$) and the interaction of sampling time and treatments was significant for both parameters ($p<0.05$).

Key words: Shrimp, feed additive, phytogenic growth promoter, performance, commercial diet

INTRODUCTION

In feeding farm animals the actual research is aimed at finding natural feed additives that can replace antibiotics with natural occurring promoters (probiotics, prebiotics, feed enzymes, organic acids, herbs) to achieve the production goal (Buchanan *et al*., 2008; Cullen *et al*., 2005; Czech *et al*., 2009; Griggs and Jacob, 2005; Hanczakowska and Swiatkiewicz, 2007).

Herbs may be used as preparations containing a herbal mixture or as individual ingredient in the diet (Czech *et al*., 2009). The product resulted of the use of natural promoters from herbs and spices is of a more favorable acceptance by the consumer. Research has proven that certain herbal extracts act as a growth promoters in intensive systems of production (Czech *et al*., 2009; Garcia *et al*., 2007; Hernandez *et al*., 2004; Mitsch *et al*., 2004; Muniruzzaman and Chowdhury, 2004; Stanley *et al*., 2004), however the results are still contradictory.

Few studies (Citarasu *et al*., 2003; Immanuel *et al*., 2004; Michael Babu *et al*., 2008 and Venketramalingam *et al*., 2007) have reported the effect of herbal extract mixture as phytogenic growth promoting agent on the shrimp growth.

MATERIALS AND METHODS

Eight hundred one day-old *Peneaus indicus* juveniles shrimps (5 g, average individual weight) were group separated (n = 30) in tanks and sampled every 7 days. The study lasted until the age of the shrimp reached 58 days. The phytogenic growth promoter Fortimax^{tm} (Herbal extracts (*Illicium verum*, *Aloe vera*, *Passiflora* sp., *Petroselinum sativum*, *Allium cepa*, *Rosmarinus officinalis*) and Neutraceutical (extracts of *Avena sativa*, *Yucca schidigera*, *Arnica longifolia*, *Chrysanthemum cinerariaefolium*, *Cynara scolymus*) and terapeuticals (somatotropin and hypofisis extract)) was used at the rate of 1 kg ton^{-1} of feed. The shrimp feed was sprayed with the Fortimax prior the start of the experiment. The shrimp was sampled and weighted using an electronic scale to assess the gain of weight for each 7 day period. Data were submitted to variance analysis as a random trial and repeated measurements, establishing a 0.05 alpha to declare differences among treatments and times (SAS).

RESULTS AND DISCUSSION

Final body weight of shrimps averaged 48.96 g. With the use of the phytogenic growth promoter (Fortimax^{tm})

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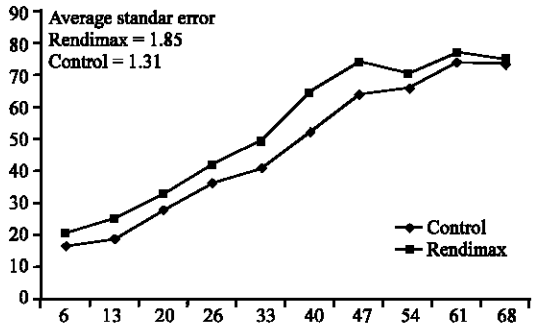

Fig. 1: Effect of phytogenic growth promoter on shrimp final weight (g)

the individual final weight was increased 13.18% ($p<0.05$; 53.08±0.59 vs. 46.90±0.41 g, for growth promoter and control, respectively). The latter result has evidently an important economical impact since fortimax diminishes the time required to achieve the commercial shrimp weight demand. Also the interaction between the growth promoter and the time of sampling was statistical significant ($p<0.05$; Fig. 1).

The Average Daily weight Gain (ADG) was affected by the promoter ($p<0.5$; 1.70±0.03 vs. 1.44±0.02 g day^{-1}, for Fortimax and control, respectively) and the interaction ($p<0.05$) of this promoter and the assessed sampling time. The mean ADG was 1.53 g.

CONCLUSION

Based on the results of the trial, in could be concluded that with the phytogenical growth promoter performance of the shrimps can be improved.

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