

**Thesis title:** Effect of Herbal Extract Supplementation on Survival Rate and Growth Performance of Pacific White Shrimp

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### Abstract

The purposes of this study were to evaluate the effect of dietary supplementation with various herbal extracts on the growth performance, feed conversion ratio, survival rate, water quality, and the amount of *Vibrio* spp. in the livers of the Pacific white shrimp.

The research was carried out in a completely randomized design with six treatments and four replications. For each replication, 18 Pacific white shrimps at P12 stage, weighing 0.004 grams each, were used. The treatments consisted of Treatment 1: commercial pelleted feed without herbal supplements as control (T1), Treatment 2: commercial pelleted feed with *Abutilon indicum* extract added (T2), Treatment 3: commercial pelleted feed with *Chaetomorpha* sp. extract added (T3), Treatment 4: commercial pelleted feed with *Cyperus rotundus* extract added (T4), Treatment 5: commercial pelleted feed with *Euphorbia hirta* extract added (T5), and Treatment 6: commercial pelleted feed with *Phyllanthus amarus* extract added (T6). The experimental trial was operated for 70 days. Analysis of variance was employed. The differences among means were compared with Duncan's New Multiple Range Test.

The results showed that all herbal supplemented treatments did not result in statistically significant differences ( $P>0.05$ ) in growth performance or feed conversion ratio of shrimps. Shrimp receiving the *Euphorbia hirta* added treatment (T5) showed the highest average daily weight gain (ADG), which was 0.063 gram/shrimp/day, and the best feed conversion ratio (FCR), which was 1.14. While the *Chaetomorpha* sp. added treatment (T3) showed the poorest values with ADG of 0.059 gram/shrimp/day and FCR of 1.22. Shrimp receiving the *Cyperus rotundus* added treatment (T4) had the lowest survival rate, compared to the highest survival rate of the control treatment (83.33% VS 94.44%). However, the survival rates of all treatments had no significant differences ( $P>0.05$ ). Additionally, all herbal supplement diets had no effects on water quality parameters ( $P>0.05$ ). The amount of *Vibrio* spp. detected in the hepatopancreas of shrimp showed that shrimp receiving *Euphorbia hirta* added treatment (T5) had the lowest amount of yellow colony of *Vibrio* spp., with value measured at  $2.37 \times 10^4$  cfu/g., and the *Phyllanthus amarus* added group (T6) had the highest amount of yellow colony of *Vibrio* spp., which was  $5.47 \times 10^4$  cfu/g. For the amount of green colony of *Vibrio* spp. in the *Phyllanthus amarus* added treatment (T6) showed the highest with value measured at  $4.75 \times 10^2$  cfu/g., and there were no green colonies of *Vibrio* spp. detected in shrimps receiving *Cyperus rotundus* added treatment (T4) and *Euphorbia hirta* added treatment (T5).

**Keywords:** Pacific white shrimp, Herb, Growth performance, Survival rate, Water quality, *Vibrio* spp.