EFFECT OF LEVEL OF BREWER'S YEAST ON GROWTH AND SURVIVAL OF WHITE SHRIMP *Litopenaeus vannamei*

Sergio F. Nates*, Addison L. Lawrence and Frank L. Castille

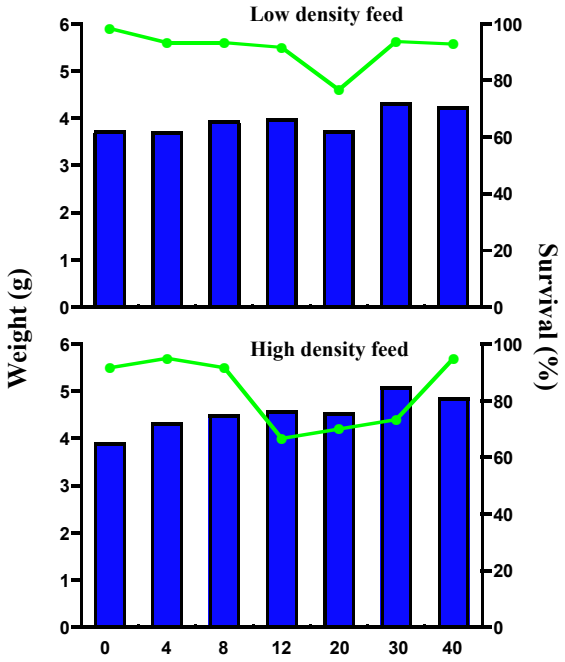
400 Gardners Station Road
Zeigler Brothers, Inc.
Gardners, Pennsylvania 17324
snates@ zeiglerfeed.com

To provide more effective ingredients for aquaculture feeds, numerous studies have examined ingredients such as plant products, agricultural processing wastes, and brewery bio-products. Although, brewers yeast is known to have a high protein content and be highly digestible, its performance in aquaculture feeds has been variable. New technology has produced a uniform, high quality yeast that could be cost effective as an ingredient in aquaculture feeds and should be re-evaluated. The goal of this study was to evaluate the effect of Pekin Brewers Dried Yeast (PBDY)[1] on growth and survival of the shrimp *Litopenaeus vannamei*.

PBDY, manufactured by Williams Bio-Products, was included in both a low nutrient density feed (35% protein) and a high nutrient density feed (40% protein) at seven levels (0, 4, 8, 12, 20, 30 and 40%). In a 35 day growth trial, shrimp were fed 15 times per day with 12 to 16 replicate tanks per dietary treatment. Shrimp were stocked at a density of 56/m^2 with a mean weight of 0.656 g each. Salinity ranged from 22 to 30 ppt, and temperature from 28 to 30°C. Dissolved oxygen was above 5 ppm and water exchange was 6.2% per day.

Survival was adequate in all dietary treatments (70 to 100%) and comparable to high quality commercial feeds used as controls. Survival did not differ between the high and low nutrient density feeds. The differences in survival between 0 and 40% yeast levels was not statistically significant. Growth was adequate in all dietary treatments with weight gains ranging from 3.7 to 5.1 g. Two-way analysis of variance indicated that there was an interaction between the effects of nutrient density and yeast level on growth. In high nutrient density feeds, growth increased with yeast level up to 12% yeast, but in low nutrient density feeds, the effect was not as evident. In both low and high nutrient density feeds, growth was not reduced by inclusion levels up to 40%.

This study supports the use of brewers yeast in shrimp feeds up to levels as high as 40%. Brewers yeast is a good source of polysaccharide immune activators such as β-1, 3-D-glucan and may improve survival. The use of brewers yeast in shrimp feeds to increase nutrient efficiency and growth, and to increase disease protection and survival, may provide an opportunity to improve the performance of shrimp feeds.



Weight (g) [bars] and survival rates (%) [line] of postlarvae of *L. vannamei* fed a low (35% protein) and high (40% protein) density feed with different inclusion levels of "Williams" brewers yeast. [1] www.williamsbioproducts.com