

## Effect of ImmunoWall® on growth performance of White Shrimp (*Litopenaeus vannamei*)

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Prebiotics as a technical alternative to replace antibiotics can improve the growth performance and stimulate the immunity of shrimp.

This study evaluated the effect of prebiotic ImmunoWall® (ICC Brazil) on growth performance of shrimp (*Litopenaeus vannamei*). It was included ImmunoWall® in the basal diet at rates: 0%, 0.25%, 0.5% and 1.0%. Each replicate consisted of 1,000 L fiber tank with stocking density of 60 pieces/m<sup>2</sup> in, in brackish water of 12-15 ppt. Shrimp of 6.45 ± 0.26 g were fed with pellet feed of 38% crude protein and 7.5% lipid 4 times per day on 07.00, 11.00, 15.00 and 19.00 pm at the level of 2.5-3 % body weight for one month. The research was assigned in completely randomized design (CRD) with 4 treatments and 4 replicates. ImmunoWall® 0.5% and 1.0% showed significantly high growth performance (P<0.05) in term of body weight but on twenty eight days of study, the growth performance of shrimp were not significantly difference (P>0.05). The shrimp weight, weight gain, average daily gain, specific growth rate and relative growth performance after fed ImmunoWall® 0.5% and 1.0% tended to be better than control of 0% ImmunoWall® (P=0.09). Significantly high feed consumption (P<0.05) performed in group of shrimp fed ImmunoWall® 0.5% and 1.0% but they were not significantly different (P>0.05) on feed conversion ratio. Supplemental ImmunoWall® 0.5% and 1.0% in shrimp diet (38% CP, 7.5% Lipid) tended to improve shrimp growth performance.

Key words: ImmunoWall®, *Litopenaeus vannamei*, growth performance.

Table 1 - Growth performance of shrimp after fed different levels of ImmunoWall®.

	Immunowall 0.0%	Immunowall 0.25%	Immunowall 0.5%	Immunowall 1.0%	P-value
<b>Production(g/tank)</b>					
Initial	190.5 <sup>a</sup> ± 11.0	189.5 <sup>a</sup> ± 8.5	198.6 <sup>a</sup> ± 3.8	195.0 <sup>a</sup> ± 5.6	0.3542
14days	228.7 <sup>a</sup> ± 12.5	243.2 <sup>a</sup> ± 7.8	252.9 <sup>a</sup> ± 6.4	248.7 <sup>a</sup> ± 26.5	0.1910
28days	254.7 <sup>a</sup> ± 13.0	285.5 <sup>a</sup> ± 24.4	299.7 <sup>a</sup> ± 24.9	293.5 <sup>a</sup> ± 40.3	0.1517
<b>Weight(g/ind.)</b>					
Initial	6.35 <sup>a</sup> ± 0.37	6.32 <sup>a</sup> ± 0.28	6.62 <sup>a</sup> ± 0.13	6.50 <sup>a</sup> ± 0.19	0.3542
14days	8.31 <sup>b</sup> ± 0.13	8.31 <sup>b</sup> ± 0.08	8.65 <sup>ab</sup> ± 0.17	8.71 <sup>a</sup> ± 0.39	0.0466
28days	10.11 <sup>a</sup> ± 0.61	10.29 <sup>a</sup> ± 0.56	10.89 <sup>a</sup> ± 0.33	10.85 <sup>a</sup> ± 0.28	0.0807
<b>Weight gain(g/ind.)</b>					
14days	1.97 <sup>a</sup> ± 0.41	2.00 <sup>a</sup> ± 0.32	2.03 <sup>a</sup> ± 0.24	2.21 <sup>a</sup> ± 0.29	0.7110
28days	3.76 <sup>a</sup> ± 0.45	3.97 <sup>a</sup> ± 0.38	4.28 <sup>a</sup> ± 0.27	4.35 <sup>a</sup> ± 0.16	0.0946
<b>Relative growth rate</b>					
28days	0.00 <sup>a</sup> ± 11.98	5.52 <sup>a</sup> ± 10.13	13.65 <sup>a</sup> ± 7.25	15.63 <sup>a</sup> ± 4.15	0.0946
<b>Average daily gain(g/ind/d)</b>					
14days	0.14 <sup>a</sup> ± 0.03	0.14 <sup>a</sup> ± 0.02	0.15 <sup>a</sup> ± 0.02	0.16 <sup>a</sup> ± 0.02	0.7110
28days	0.13 <sup>a</sup> ± 0.02	0.14 <sup>a</sup> ± 0.01	0.15 <sup>a</sup> ± 0.01	0.16 <sup>a</sup> ± 0.01	0.0946
<b>Specific growth rate(%/d)</b>					
14days	1.94 <sup>a</sup> ± 0.44	1.97 <sup>a</sup> ± 0.34	1.91 <sup>a</sup> ± 0.22	2.09 <sup>a</sup> ± 0.23	0.8720
28days	1.85 <sup>a</sup> ± 0.22	1.91 <sup>a</sup> ± 0.20	2.12 <sup>a</sup> ± 0.11	2.10 <sup>a</sup> ± 0.09	0.0843
<b>Total feed consume(g/tank)</b>					
14days	76.40 <sup>a</sup> ± 4.48	77.13 <sup>a</sup> ± 4.28	78.05 <sup>a</sup> ± 5.44	81.70 <sup>a</sup> ± 2.63	0.3574
28days	140.50 <sup>b</sup> ± 5.67	149.15 <sup>b</sup> ± 8.04	159.18 <sup>a</sup> ± 3.41	159.83 <sup>a</sup> ± 5.34	0.0015
<b>Feed consume(g/ind)</b>					
14days	2.55 <sup>a</sup> ± 0.15	2.57 <sup>a</sup> ± 0.14 <sup>a</sup>	2.60 ± 0.18	2.72 <sup>a</sup> ± 0.09	0.3574
28days	5.11 <sup>b</sup> ± 0.10	5.10 <sup>b</sup> ± 0.29	5.44 <sup>a</sup> ± 0.16	5.62 <sup>a</sup> ± 0.24	0.0099
<b>Daily feed consume(g/ind/d)</b>					
14days	0.18 <sup>a</sup> ± 0.01	0.18 <sup>a</sup> ± 0.01	0.19 <sup>a</sup> ± 0.01	0.19 <sup>a</sup> ± 0.01	0.3574
28days	0.18 <sup>b</sup> ± 0.00	0.18 <sup>b</sup> ± 0.01	0.19 <sup>a</sup> ± 0.01	0.20 <sup>a</sup> ± 0.01	0.0099
<b>Feed conversion ratio</b>					
14days	1.33 <sup>a</sup> ± 0.21	1.31 <sup>a</sup> ± 0.17	1.29 <sup>a</sup> ± 0.06	1.25 <sup>a</sup> ± 0.17	0.9105
28days	1.37 <sup>a</sup> ± 0.15	1.29 <sup>a</sup> ± 0.06	1.28 <sup>a</sup> ± 0.06	1.29 <sup>a</sup> ± 0.07	0.4681

Note: Different letters within row indicate significant differences between samples (P<0.05).