Efficacy of Availa®Zn and Availa®Se for White Shrimp (*Litopenaeus vannamei*)

**Introduction:**
This study was designed to evaluate the effects of Availa®Zn and Availa®Se on growth performance, meat quality, and immune response of white shrimp (*Litopenaeus vannamei*).

**Experimental Design:**
This 8-wk trial operated as a complete randomized design, with a 2x2 factorial arrangement of treatments, along with 6 replications per treatment and 25 shrimp per replication. 600 shrimp initially weighed ~4 g and were fed pelleted diets 4 times daily, at 2.5 to 3% body weight. The arrangement of two zinc sources [Availa-Zn zinc amino acid complex or zinc sulfate (ZnSO₄)] and two selenium sources [Availa-Se zinc-L-selenomethionine or sodium selenite (Na₂SeO₃)] comprised the four treatments.

**Treatments:**

<table>
<thead>
<tr>
<th>Item</th>
<th>ZnSO₄ + Na₂SeO₃</th>
<th>Availa®Zn + Na₂SeO₃</th>
<th>ZnSO₄ + Availa®Se</th>
<th>Availa-Zn + Availa-Se</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zn as ZnSO₄</td>
<td>120</td>
<td>70</td>
<td>120</td>
<td>70</td>
</tr>
<tr>
<td>Zn as Availa-Zn</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Se as Na₂SeO₃</td>
<td>0.30</td>
<td>0.30</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Se as Availa-Se</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
</tbody>
</table>

**Results:**
- Partially replacing inorganic Zn with Availa-Zn improved shrimp weight, *P < 0.05*
- Feeding either Availa-Zn or Availa-Se generally improved measures of immunity, *P ≤ 0.05*
- Whole shrimp drip-loss was decreased by feeding Availa-Se alone (*P < 0.05*) or in combination with Availa-Zn, *P < 0.10*
- Rancidity of shrimp meat was improved by feeding either Availa-Zn or Availa-Se, *P < 0.10*
- Redness of shrimp meat boiled post-72-h chill was improved for shrimp consuming Availa-Se, *P < 0.05*

**Conclusion:**
Including Availa-Zn and Availa-Se in the diets of white shrimp (*Litopenaeus vannamei*) is beneficial for shrimp growth, immunity, and meat production.
Efficacy of Availa®Zn and Availa®Se for White Shrimp (*Litopenaeus vannamei*) Mihai Sun1*, Terry L. Ward1, Orapint Jintasataporn2, Cláudia Figueiredo-Silva1; 1Zinpro Corporation, Eden Prairie, MN, USA, 2Department of Aquaculture, Faculty of Fisheries, Kasetsart University, Bangkok, Thailand

A study of *Litopenaeus vannamei* (initial wt. = 4 g) was conducted as a complete randomized design (CRD) with 6 replications (tanks) of each treatment, and 25 shrimp per replication. Treatments were arranged as a 2 × 2 factorial, utilizing two zinc sources [zinc amino acid complex (ZnAA) or ZnSO4] and two selenium sources [zinc-L-selenomethionine (SeAA) or sodium selenite (Na2SeO3)] (Availa®Zn, Availa®Se; Zinpro Corporation, Eden Prairie, MN, USA). Shrimp were fed pelleted diets 4 times daily, for eight weeks, at 2.5 to 3% body weight. Shrimp consuming diets containing ZnAA and Na2SeO3, along with shrimp fed ZnAA and SeAA, had greater (P < 0.05) body weight than shrimp fed inorganic sources of Zn and Se. Total hemocyte and phenol oxidase activity were increased (P < 0.001) when ZnAA or SeAA were present in the diet. Whole shrimp drip loss was decreased for shrimp consuming diets that included ZnAA or SeAA (P < 0.05). Rancidity of shrimp meat was decreased (P ≤ 0.10) by feeding either ZnAA or SeAA. Redness of fresh shrimp meat after 72-h chill, boiled post-72-h chill or post-14-d freeze increased (P = 0.03, 0.06, and 0.07, respectively) when shrimp were fed diets supplemented with SeAA. Overall, inclusion of Availa-Zn zinc amino acid complex and/or Availa-Se zinc-L-selenomethionine was beneficial for shrimp growth and some aspects of both immunity and shrimp meat production.

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