***Myo*-inositol improves growth performance and antioxidant status and** **regulates lipid metabolism of** **Chinese mitten crab** **(*Eriocheir sinensis*)fed different percentage of lipid**

Xianyong Bua, Xiaodan Wanga\*, Zhideng Lina, Chunling Wanga, Lingyu Lia, Shubin Liua, Qingchao Shib, Jian G. Qinc, Liqiao Chena\*

a *Laboratory of Aquaculture Nutrition and Environmental Health (LANEH), School of Life Sciences, East China Normal University, Shanghai, 200241, PR China*

b *Key Laboratory of Sichuan Province for Fishes Conservation and Utilization in the Upper Reaches of the Yangtze River, Neijiang Normal University, Sichuan, 641100, PR China*

c *College of Science and Engineering, Flinders University, Adelaide, SA, 5001, Australia*

\* Corresponding author: Laboratory of Aquaculture Nutrition and Environmental Health (LANEH), School of Life Sciences, East China Normal University, Shanghai, 200241, China.

E-mail address: xdwang@bio.ecnu.edu.cn (X. Wang); lqchen@bio.ecnu.edu.cn (L. Chen)

Telephone: +86-21-54345354 (L. Chen)

***Calculations:***

Survival (SR, %) = 100 × (final crab number / initial crab number)

Weight gain (WG, %) = 100 × (final body weight, g – initial body weight, g) / initial body weight, g

Specific growth rate (SGR, % day -1) = 100 × [ln (final body weight, g) – ln (initial body weight, g)] / 56 days

Hepatosomatic index (HSI, %) = 100 × wet hepatopancreas weight, g / wet body weight, g

Feed conversion ratio (FCR) = dry feed consumed, g / wet weight gain, g

**Supplemental Table 1** Summary oftwo-way ANOVA between *myo*-inositol levels and lipid levels on growth performance, feed utilization and HSI of *Eriocheir sinensis* fed different diets

|  |  |  |
| --- | --- | --- |
| Parameter | Source of variation | Two-way ANOVA (*P* value) |
| WG | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |
| SGR | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |
| Survival | LL | NS |
|  | ML | NS |
|  | LL×ML | NS |
| FCR | LL | <0.05 |
|  | ML | NS |
|  | LL×ML | NS |
| HSI | LL | <0.01 |
|  | ML | <0.01 |
|  | LL×ML | NS |

NS, no significant difference

LL, lipid levels; ML, *myo*-inositol levels; LL×ML, lipid levels × *myo*-inositol levels.

**Supplemental Table 2** Summary oftwo-way ANOVA between *myo*-inositol levels and lipid levels on proximate compositions of different tissues and *myo*-inositol content in hepatopancreas of *Eriocheir sinensis* fed different diets

|  |  |  |
| --- | --- | --- |
| Parameter | Source of variation | Two-way ANOVA (*P* value) |
| Whole-body moisture | LL | NS |
|  | ML | NS |
|  | LL×ML | NS |
| Whole-body crude protein | LL | <0.01 |
|  | ML | <0.01 |
|  | LL×ML | NS |
| Whole-body total lipid | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |
| Whole-body ash | LL | NS |
|  | ML | <0.05 |
|  | LL×ML | NS |
| Hepatopancreas crude protein | LL | <0.01 |
|  | ML | NS |
|  | LL×ML | NS |
| Hepatopancreas total lipid | LL | <0.05 |
|  | ML | <0.05 |
|  | LL×ML | NS |
| Muscle crude protein | LL | NS |
|  | ML | NS |
|  | LL×ML | NS |
| Muscle total lipid | LL | <0.01 |
|  | ML | <0.01 |
|  | LL×ML | NS |
| Hepatopancreas MI content | LL | <0.05 |
|  | ML | <0.01 |
|  | LL×ML | NS |

NS, no significant difference

LL, lipid levels; ML, *myo*-inositol levels; LL×ML, lipid levels × *myo*-inositol levels.

**Supplemental Table 3** Summary of two-way ANOVA between *myo*-inositol levels and lipid levels on the expression of genes in hepatopancreas of *Eriocheir sinensis* fed different diets

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Parameter | Source of variation | Two-way ANOVA (*P* value) | Parameter | Source of variation | Two-way ANOVA (*P* value) |
| *srebp1* | LL | <0.01 | *cpt2* | LL | <0.01 |
|  | ML | <0.01 |  | ML | <0.01 |
|  | LL×ML | NS |  | LL×ML | NS |
| *fas* | LL | <0.01 | *camkkβ* | LL | <0.01 |
|  | ML | <0.01 |  | ML | <0.01 |
|  | LL×ML | <0.01 |  | LL×ML | NS |
| *dgat1* | LL | <0.05 | *fabp3* | LL | <0.01 |
|  | ML | <0.01 |  | ML | <0.01 |
|  | LL×ML | NS |  | LL×ML | <0.05 |
| *Δ9 fad* | LL | <0.01 | *fabp9* | LL | NS |
|  | ML | <0.01 |  | ML | NS |
|  | LL×ML | <0.01 |  | LL×ML | NS |
| *cpt1a* | LL | NS | *fabp10* | LL | <0.01 |
|  | ML | <0.01 |  | ML | <0.01 |
|  | LL×ML | NS |  | LL×ML | NS |
| *cpt1b* | LL | NS | *mttp* | LL | <0.01 |
|  | ML | NS |  | ML | <0.01 |
|  | LL×ML | NS |  | LL×ML | NS |

NS, no significant difference

LL, lipid levels; ML, *myo*-inositol levels; LL×ML, lipid levels × *myo*-inositol levels.

**Supplemental Table 4** Summary oftwo-way ANOVA between *myo*-inositol levels and lipid levels on the expression of proteins in hepatopancreas of *Eriocheir sinensis* fed different diets

|  |  |  |
| --- | --- | --- |
| Parameter | Source of variation | Two-way ANOVA (*P* value) |
| p-IP3R | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |
| p-AMPK | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |
| p-ACC1 | LL | NS |
|  | ML | <0.01 |
|  | LL×ML | NS |

NS, no significant difference

LL, lipid levels; ML, *myo*-inositol levels; LL×ML, lipid levels × *myo*-inositol levels.