**Appendix**

**Figure 1**

**DHA Absorption in Gastrointestinal Tract of Maternal Mice**

|  |  |
| --- | --- |
| Group | Concentration of DHA (μg/mg) |
| Stomach | Duodenum | Jejunum | Ileum | Colon |
| Normal FO | 1.93 ± 0.65 | 1.22 ± 0.80 | 1.50 ± 0.37 | 1.01 ± 0.39 | 1.34 ± 0.51 |
| Nano FO | 1.25 ± 0.44 | 2.52 ± 0.73 \* | 2.14 ± 0.59 \* | 0.91 ± 0.34 | 0.79 ± 0.38 |

(\* significant difference)



 Stomach duodenum jejunum ileum colon

**Figure 2**

**DHA Biodistribution in Maternal Tissues**

|  |  |
| --- | --- |
| Group | Concentration of DHA (mg/g) |
| Brain | Liver | Serum |
| Normal FO  | 11.64 ± 1.75 | 4.46 ± 3.04 | 0.39 ± 0.43 |
| Nano FO  | 14.40 ± 0.60\* | 6.09 ± 2.28 | 0.44 ± 0.42 |

(\* significant difference)

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**Figure 3**

**Novel Object Recognition**

|  |  |
| --- | --- |
| Group | Time (second) |
| Familiar object | Novel object |
| Control | 10.83 ± 1.61 | 9.17 ± 1.61 |
| Zein | 9.78 ± 1.06 | 10.22 ± 1.06 |
| Normal FO – Low | 10.67 ± 1.58 | 9.33 ± 1.58 |
| Normal FO – High | 7.44 ± 1.37 \* | 12.56 ± 1.37 \* |
| Nano FO – Low | 8.88 ± 2.26 \* | 11.12 ± 2.26 \* |
| Nano FO – High | 7.34 ± 1.76 \* | 12.66 ± 1.76 \* |

(\* significant difference)

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**Figure 4**

**Brain-Derived Neurotrophic Factor (BDNF) in Offspring**

|  |  |
| --- | --- |
| Group | Concentration of BDNF (pg/mg) |
| Cortex | Hippocampus |
| Control | 5593.25 ± 334.01 | 5800.32 ± 1078.74 |
| Zein | 6023.66 ± 1027.70 | 5795.75 ± 662.36 |
| Normal FO – Low | 6472.64 ± 611.28 | 5309.60 ± 986.22 |
| Normal FO – High | 4934.02 ± 1369.51 | 6088.34 ± 951.90 |
| Nano FO – Low | 5644.65 ± 626.46 | 6165.31 ± 428.70 |
| Nano FO – High | 6162.00 ± 255.30 | 7917.77 ± 629.92\* |

(\* significant difference)

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nano-high

**Figure 5**

**Y-maze Test**

|  |  |
| --- | --- |
| Group | Time (second) |
| Start arm | Familiar arm | Novel arm |
| Control | 129.72 ± 26.80 | 81.87 ± 23.21 | 88.13 ± 10.25 |
| Zein | 116.40 ± 16.71 | 90.15 ± 18.47 | 92.97 ± 12.25 |
| Normal FO – Low  | 118.52 ± 15.80 | 85.89 ± 21.89 | 95.17 ± 13.28 |
| Normal FO – High  | 126.03 ± 22.45 | 78.36 ± 19.31 | 95.36 ± 15.09 |
| Nano FO – Low  | 120.38 ± 20.27 | 81.75 ± 17.90 | 96.51 ± 16.31 |
| Nano FO – High  | 130.72 ± 21.22 | 74.18 ± 23.67 \* | 95.10 ± 24.87 \* |

(\*significant difference)

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nano-high

The time that the mice exploring the three different arms (the start, familiar and novel arms) of a Y-maze were recorded. Longer time spent in exploring novel arm compared to familiar arm would indicate better spatial learning and memory abilities.