**Table S1.** Protein concentration (in mg/100 g dry weight) respect to carbohydrates, P:C ratio and energy content of synthetic diets.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Protein (P) | Carbohydrate (C) | P+C | P:C ratio | Fat (mg) | Energy content (kcal) |
| 80 | 0 | 80 | 1:0 | 1.3 | 331.7 |
| 64 | 16 | 80 | 4:1 | 1.3 | 331.7 |
| 40 | 40 | 80 | 1:1 | 1.3 | 331.7 |
| 16 | 64 | 80 | 1:4 | 1.3 | 331.7 |
| 0 | 80 | 80 | 0:1 | 1.3 | 331.7 |

**Table S2.** Comparisons of the p:c content in diet, and its effect on the amount of food consumed by *T. molitor* males before manipulating health status, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| State of health | Diet (p:c) | Estimate | *z* | *P* |
| Non-manipulated | 1:0–0:1 | -3.3 | -14.03 | <0.0001\* |
| Non-manipulated | 4:1–0:1 | -1.39 | -5.91 | <0.0001\* |
| Non-manipulated | 1:1–0:1 | -1.02 | -4.37 | <0.0001\* |
| Non-manipulated | 1:4–0:1 | -1.002 | -4.26 | <0.0001\* |
| Tween control | 1:0–0:1 | -3.06 | -13.04 | <0.0001\* |
| Tween control | 4:1–0:1 | -1.01 | -4.32 | <0.0001\* |
| Tween control | 1:1–0:1 | -0.03 | -0.17 | 0.86 |
| Tween control | 1:4–0:1 | -1.32 | -5.63 | <0.0001\* |
| Non-viable spores | 1:0–0:1 | -3.03 | -12.91 | <0.0001\* |
| Non-viable spores | 4:1–0:1 | -1.18 | -5.02 | <0.0001\* |
| Non-viable spores | 1:1–0:1 | -0.88 | -3.77 | <0.001\* |
| Non-viable spores | 1:4–0:1 | -0.9 | -3.84 | <0.001\* |
| Fungus | 1:0–0:1 | -3.64 | -15.52 | <0.0001\* |
| Fungus | 4:1–0:1 | -1.56 | -6.63 | <0.0001\* |
| Fungus | 1:1–0:1 | -1.05 | -4.48 | <0.0001\* |
| Fungus | 1:4–0:1 | -1.2 | -5.11 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S3.** Comparisons of state of health treatment and its effect on the amount of food consumed by *T. molitor* males before manipulating health status, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diet (p:c) | State of health | Estimate | *z* | *P* |
| 1:0 | Non-manipulated–Fungus | 0.19 | 0.82 | 0.47 |
| 1:0 | Tween control–Fungus | 0.16 | 0.72 | 0.47 |
| 1:0 | Non-viable spores–Fungus | 0.31 | 1.33 | 0.47 |
| 4:1 | Non-manipulated–Fungus | 0.01 | 0.05 | 0.95 |
| 4:1 | Tween control–Fungus | 0.13 | 0.55 | 0.95 |
| 4:1 | Non-viable spores–Fungus | 0.07 | 0.33 | 0.95 |
| 1:1 | Non-manipulated–Fungus | -0.13 | -0.56 | 0.57 |
| 1:1 | Tween control–Fungus | 0.59 | 2.55 | <0.05\* |
| 1:1 | Non-viable spores–Fungus | -0.13 | -0.56 | 0.57 |
| 1:4 | Non-manipulated–Fungus | 0.04 | 0.18 | 0.99 |
| 1:4 | Tween control–Fungus | -0.53 | -2.27 | 0.06 |
| 1:4 | Non-viable spores–Fungus | -0.13 | -0.004 | 0.99 |
| 0:1 | Non-manipulated–Fungus | -0.15 | -0.66 | 0.5 |
| 0:1 | Tween control–Fungus | -0.41 | -1.75 | 0.23 |
| 0:1 | Non-viable spores–Fungus | -0.29 | -1.27 | 0.41 |

\* Significant value (*P* < 0.05).

**Table S4.** Comparisons of the p:c content in diet, and its effect on the amount of food consumed by *T. molitor* males after manipulating health status, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| State of health | Diet (p:c) | Estimate | *z* | *P* |
| Non-manipulated | 1:0–0:1 | -3.67 | -8.83 | <0.0001\* |
| Non-manipulated | 4:1–0:1 | -2.34 | -5.64 | <0.0001\* |
| Non-manipulated | 1:1–0:1 | -2.16 | -5.21 | <0.0001\* |
| Non-manipulated | 1:4–0:1 | -2.3 | -5.54 | <0.0001\* |
| Tween control | 1:0–0:1 | -4.64 | -11.16 | <0.0001\* |
| Tween control | 4:1–0:1 | -5.07 | -12.2 | <0.0001\* |
| Tween control | 1:1–0:1 | -3.99 | -9.6 | <0.0001\* |
| Tween control | 1:4–0:1 | -3.73 | -8.98 | <0.0001\* |
| Non-viable spores | 1:0–0:1 | -6.27 | -15.09 | <0.0001\* |
| Non-viable spores | 4:1–0:1 | -4.14 | -9.95 | <0.0001\* |
| Non-viable spores | 1:1–0:1 | -3.52 | -8.47 | <0.0001\* |
| Non-viable spores | 1:4–0:1 | -4.92 | -11.84 | <0.0001\* |
| Fungus | 1:0–0:1 | -4.35 | -10.46 | <0.0001\* |
| Fungus | 4:1–0:1 | -4.51 | -10.85 | <0.0001\* |
| Fungus | 1:1–0:1 | -4.12 | -9.92 | <0.0001\* |
| Fungus | 1:4–0:1 | -2.71 | -6.53 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S5.** Comparisons of the p:c content in diet, and its effect on the amount of food consumed by *T. molitor* males after manipulating health status, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Diet (p:c) | State of health | Estimate | *z* | *P* |
| 1:0 | Non-manipulated–Fungus | 1.18 | 2.84 | <0.01 |
| 1:0 | Tween control–Fungus | 2.23 | 5.38 | <0.0001\* |
| 1:0 | Non-viable spores–Fungus | 0.12 | 0.3 | 0.76 |
| 4:1 | Non-manipulated–Fungus | 2.67 | 6.43 | <0.0001\* |
| 4:1 | Tween control–Fungus | 1.96 | 4.73 | <0.0001\* |
| 4:1 | Non-viable spores–Fungus | 2.42 | 5.83 | <0.0001\* |
| 1:1 | Non-manipulated–Fungus | 2.46 | 5.92 | <0.0001\* |
| 1:1 | Tween control–Fungus | 2.66 | 6.4 | <0.0001\* |
| 1:1 | Non-viable spores–Fungus | 2.65 | 6.38 | <0.0001\* |
| 1:4 | Non-manipulated–Fungus | 0.91 | 2.2 | 0.05 |
| 1:4 | Tween control–Fungus | 1.5 | 3.62 | <0.001 |
| 1:4 | Non-viable spores–Fungus | -0.15 | -0.37 | 0.7 |
| 0:1 | Non-manipulated–Fungus | 0.5 | 1.21 | 0.22 |
| 0:1 | Tween control–Fungus | 2.53 | 6.08 | <0.0001\* |
| 0:1 | Non-viable spores–Fungus | 2.05 | 4.93 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S6.** Comparisons of the p:c content in diet, and its effect on the amount of food consumed by *T. molitor* females before the assignment to the groups mating, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| State of health | Diet (p:c) | Estimate | *z* | *P* |
| Non-manipulated | 1:0–0:1 | -5.22 | -18.07 | <0.0001\* |
| Non-manipulated | 4:1–0:1 | -3.15 | -10.9 | <0.0001\* |
| Non-manipulated | 1:1–0:1 | -2.91 | -10.06 | <0.0001\* |
| Non-manipulated | 1:4–0:1 | -1.88 | -6.52 | <0.0001\* |
| Tween control | 1:0–0:1 | -5.25 | -18.16 | <0.0001\* |
| Tween control | 4:1–0:1 | -3.16 | -10.92 | <0.0001\* |
| Tween control | 1:1–0:1 | -2.93 | -10.13 | <0.0001\* |
| Tween control | 1:4–0:1 | -1.88 | -6.52 | <0.0001\* |
| Non-viable spores | 1:0–0:1 | -5.23 | -18.1 | <0.0001\* |
| Non-viable spores | 4:1–0:1 | -3.15 | -10.91 | <0.0001\* |
| Non-viable spores | 1:1–0:1 | -2.92 | -10.11 | <0.0001\* |
| Non-viable spores | 1:4–0:1 | -1.86 | -6.45 | <0.0001\* |
| Fungus | 1:0–0:1 | -5.22 | -18.06 | <0.0001\* |
| Fungus | 4:1–0:1 | -3.14 | -10.86 | <0.0001\* |
| Fungus | 1:1–0:1 | -2.92 | -10.1 | <0.0001\* |
| Fungus | 1:4–0:1 | -1.87 | -6.48 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S7.** Comparisons of the protein content in diet, and its effect on the amount of food consumed by *T. molitor* females after the assignment to the groups mating, according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| State of health | Diet (p:c) | Estimate | *z* | *P* |
| Non-manipulated | 1:0–0:1 | -5.24 | -15.87 | <0.0001\* |
| Non-manipulated | 4:1–0:1 | -3.06 | -9.28 | <0.0001\* |
| Non-manipulated | 1:1–0:1 | -2.9 | -8.78 | <0.0001\* |
| Non-manipulated | 1:4–0:1 | -1.9 | -5.75 | <0.0001\* |
| Tween control | 1:0–0:1 | -5.25 | -15.9 | <0.0001\* |
| Tween control | 4:1–0:1 | -3.06 | -9.28 | <0.0001\* |
| Tween control | 1:1–0:1 | -2.92 | -8.85 | <0.0001\* |
| Tween control | 1:4–0:1 | -1.9 | -5.75 | <0.0001\* |
| Non-viable spores | 1:0–0:1 | -5.22 | -15.8 | <0.0001\* |
| Non-viable spores | 4:1–0:1 | -3.05 | -9.23 | <0.0001\* |
| Non-viable spores | 1:1–0:1 | -2.91 | -8.81 | <0.0001\* |
| Non-viable spores | 1:4–0:1 | -1.89 | -5.74 | <0.0001\* |
| Fungus | 1:0–0:1 | -5.21 | -15.79 | <0.0001\* |
| Fungus | 4:1–0:1 | -3.05 | -9.26 | <0.0001\* |
| Fungus | 1:1–0:1 | -2.92 | -8.83 | <0.0001\* |
| Fungus | 1:4–0:1 | -1.89 | -5.72 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S8.** Comparisons of the different diets and their effect on the protein amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Proteins | 1:0–0:1 | 11.71 | 18.98 | <0.0001\* |
| Proteins | 4:1–0:1 | 3.91 | 6.34 | <0.0001\* |
| Proteins | 1:1–0:1 | -7.19 | -11.64 | <0.0001\* |
| Proteins | 1:4–0:1 | -9.69 | -15.7 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S9.** Comparisons of the different health states and their effect on the protein amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Proteins | Non-manipulated–Fungus | 1.05 | 2.29 | <0.05\* |
| Proteins | Tween control–Fungus | 4.45 | 9.65 | <0.0001\* |
| Proteins | Non-viable spores–Fungus | 4.48 | 9.72 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S10.** Comparisons of the different diets and their effect on the protein amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Proteins | 1:0–0:1 | 15.33 | 23.06 | <0.0001\* |
| Proteins | 4:1–0:1 | 4.88 | 7.34 | <0.0001\* |
| Proteins | 1:1–0:1 | -2.81 | -4.23 | <0.0001\* |
| Proteins | 1:4–0:1 | -9.16 | -13.79 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S11.** Comparisons of the different health states and their effect on the protein amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Proteins | Non-manipulated–Fungus | 1.19 | 2.4 | <0.05\* |
| Proteins | Tween control–Fungus | 2.69 | 5.44 | <0.0001\* |
| Proteins | Non-viable spores–Fungus | 2.11 | 4.26 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S12.** Comparisons of the different diets and their effect on the lipid amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Lipids | 1:0–0:1 | -33.73 | -24.6 | <0.0001\* |
| Lipids | 4:1–0:1 | -39.55 | -28.85 | <0.0001\* |
| Lipids | 1:1–0:1 | -28.31 | -20.66 | <0.0001\* |
| Lipids | 1:4–0:1 | -23.57 | -17.19 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S13.** Comparisons of the different health states and their effect on the lipid amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Lipids | Non-manipulated–Fungus | 23.89 | 22.36 | <0.0001\* |
| Lipids | Tween control–Fungus | 29.6 | 27.7 | <0.0001\* |
| Lipids | Non-viable spores–Fungus | 13.89 | 13.01 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S14.** Comparisons of the different diets and their effect on the lipid amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Lipids | 1:0–0:1 | -27.002 | -16.22 | <0.0001\* |
| Lipids | 4:1–0:1 | -34.77 | -20.89 | <0.0001\* |
| Lipids | 1:1–0:1 | -20.07 | -12.05 | <0.0001\* |
| Lipids | 1:4–0:1 | -3.03 | -1.82 | 0.06 |

\* Significant value (*P* < 0.05).

**Table S15.** Comparisons of the different health states and their effect on the lipid amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Lipids | Non-manipulated–Fungus | 6.94 | 5.46 | <0.0001\* |
| Lipids | Tween control–Fungus | 35.47 | 27.91 | <0.0001\* |
| Lipids | Non-viable spores–Fungus | 30.14 | 23.72 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S16.** Comparisons of the different diets and their effect on the carbohydrate amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Carbohydrates | 1:0–0:1 | -16.34 | -36.27 | <0.0001\* |
| Carbohydrates | 4:1–0:1 | -16.43 | -36.48 | <0.0001\* |
| Carbohydrates | 1:1–0:1 | -16.38 | -36.36 | <0.0001\* |
| Carbohydrates | 1:4–0:1 | -14.13 | -31.38 | <0.0001\* |

**Table S17.** Comparisons of the different health states and their effect on the carbohydrate amount in males of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Carbohydrates | Non-manipulated–Fungus | -4.56 | -13.21 | <0.0001\* |
| Carbohydrates | Tween control–Fungus | -6.88 | -19.93 | <0.0001\* |
| Carbohydrates | Non-viable spores–Fungus | -5.83 | -16.88 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S18.** Comparisons of the different diets and their effect on the carbohydrate amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | Diet (p:c) | Estimate | *t* | *P* |
| Carbohydrates | 1:0–0:1 | -25.78 | -35.53 | <0.0001\* |
| Carbohydrates | 4:1–0:1 | -17.76 | -24.48 | <0.0001\* |
| Carbohydrates | 1:1–0:1 | -22.63 | -31.2 | <0.0001\* |
| Carbohydrates | 1:4–0:1 | -24.37 | -33.59 | <0.0001\* |

\* Significant value (*P* < 0.05).

**Table S19.** Comparisons of the different health states and their effect on the carbohydrate amount in females of *T. molitor* according to the Least Significant Difference post-hoc test.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Macronutrient | State of health | Estimate | *t* | *P* |
| Carbohydrates | Non-manipulated–Fungus | -0.91 | -1.66 | 0.09 |
| Carbohydrates | Tween control–Fungus | -11.13 | -20.38 | <0.0001\* |
| Carbohydrates | Non-viable spores–Fungus | -3.17 | -5.81 | <0.0001\* |

\* Significant value (*P* < 0.05).