**Residual toxicity and sublethal effects of Fenvalerate on the development and physiology of *Spodoptera exigua* reared on different host plants**

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**Running Head:** Toxicity of Fenvalerate and resistance of *Spodoptera exigua*

**Table S1** Susceptibility of fenvalerate insecticides to second-instar *S. exigua* larvae fed on different host plants

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Food regimes** | **No of insects** | **LC50 (mg L-1) (95% FL)** | **Slope ± S.E.** | **X2** | **df** | **RRa** |
| Unselected | 270 | 31.65 (36.97 ± 26.67) | 1.98 ± 0.20 | 1.51 | 3 | ---- |
| Diet-(G1) | 270 | 31.65 (36.97 ± 26.67) | 1.98 ± 0.20 | 1.51 | 3 | 1 |
| Cabbage-(G1) | 270 | 36.01 (41.19 ± 31.19) | 2.27 ± 0.21 | 0.78 | 3 | 1.14 |
| Tomato-(G1) | 270 | 25.75 ( 31.53 ± 20.27) | 1.45 ± 0.18 | 0.06 | 3 | 1.23 |
| Unselected | 270 | 31.51 (36.94 ± 26.46) | 1.98 ± 0.20 | 1.82 | 3 | ---- |
| Diet-(G2) | 270 | 30.52 (34.96 ± 27.27) | 2.45 ± 0.23 | 1.71 | 3 | 0.97 |
| Cabbage-(G2) | 270 | 34.11 (38.99 ± 29.46) | 2.37 ± 0.22 | 0.60 | 3 | 1.08 |
| Tomato-(G2) | 270 | 24.93 (36.88 ± 19.92) | 1.65 ± 0.19 | 0.39 | 3 | 0.79 |
| Unselected | 270 | 31.88 ( 36.88 ± 26.99) | 2.12 ± 0.21 | 1.76 | 3 | ---- |
| Diet-(G3) | 270 | 30.39 ( 34.72 ± 26.23) | 2.49 ± 0.23 | 1.37 | 3 | 0.59 |
| Cabbage-(G3) | 270 | 39.43 ( 45.36 ± 33.85) | 2.31 ± 0.23 | 0.99 | 3 | 1.24 |
| Tomato-(G3) | 270 | 24.73 (28.29 ± 21.21 | 2.66 ± 0.26 | 2.30 | 3 | 0.76 |

**Table S2** Synergism tests for fenvalerate resistance in *S. exigua*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Population** | **Treatment** | **LC50 [95% CI] (μg/ml)** | **Sloe ± SE** | ***X2*** | **df** | **n** | **SRa** |
| **Diet CK** | Fenvalerate | 31.88 ( 36.88 ± 26.99) | 2.12 ± 0.21 | 1.76 | 3 | 270 | 1 |
| Fenvalerate + PBO | 28.41 (32.38 ± 24.59) | 2.487 ± 0.23 | 1.87 | 3 | 270 | 1.12 |
| Fenvalerate + DEF | 32.29 (36.84 ± 27.89) | 2.60 ± 0.25 | 0.88 | 3 | 270 | 0.99 |
| **Diet** | Fenvalerate (G3) | 30.39 ( 34.72 ± 26.23) | 2.49 ± 0.23 | 1.37 | 3 | 270 | 1 |
| Fenvalerate + PBO | 27.05 (30.88 ± 23.34) | 2.39 ± 0.23 | 0.83 | 3 | 270 | 1.12 |
| Fenvalerate + DEF | 26.69 (30.64 ± 22.88) | 2.35 ± 0.22 | 0.35 | 3 | 270 | 1.14 |
| **Cabbage** | Fenvalerate (G3) | 39.43 ( 45.36 ± 33.85) | 2.31 ± 0.23 | 0.99 | 3 | 270 | 1 |
| Fenvalerate + PBO | 28.37 (31.70 ± 23.18) | 2.55 ± 0.24 | 0.14 | 3 | 270 | 1.38 |
| Fenvalerate + DEF | 32.80 (36.77 ± 26.98) | 2.51 ± 0.23 | 0.23 | 3 | 270 | 1.2 |
| **Tomato** | Fenvalerate (G3) | 24.73 (28.29 ± 21.21) | 2.66 ± 0.26 | 2.30 | 3 | 270 | 1 |
| Fenvalerate + PBO | 22.44 (26.31 ± 18.72) | 1.87 ± 0.19 | 1.29 | 3 | 270 | 1.10 |
| Fenvalerate + DEF | 23.89 (27.71 ± 20.22) | 1.98 ± 0.19 | 2.57 | 3 | 270 | 1.03 |

aSR (synergism ratio) = LC50 of a strain treated with fenvalerate alone divided by LC50 of the same strain treated with fenvalerate and a synergist.