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Comparisons of pupae ail fatty acids composition in invertebrates

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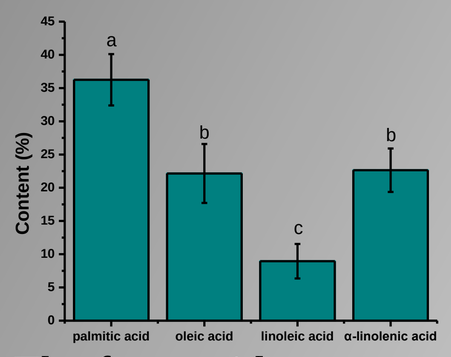
INTRODUCTION

Mulberry is often disturbed by many kinds of pests, which leads to the decline of the quality and yield of mulberry leaves, thus seriously affecting the development of sericulture industry. In the process of control, spraying chemical pesticides is the most important method. Although the cost is low and the effect is fast, it is easy to cause the resistance of pests to produce the silkworm's drug damage and the mulberry garden environmental pollution and other problems. How to crack the pest damage is an important issue to maintain the sustainable and healthy development of the sericulture industry. Some Lepidoptera insects contain a lot of linoleic acid (LA) and α - linolenic acid (ALA). La and ALA are two essential fatty acids with high nutritional value.

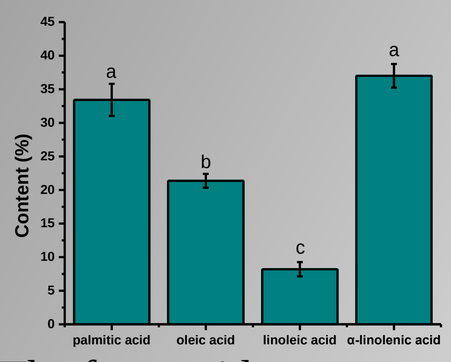
METHODS

The pupae of *Glyphodes pyloalis*, *Spodoptera litura* and *Phthonandria atrilineata* were dried at 60°C and the larvae were freeze-dried. Each individual was weighed and transferred to a 10 mL centrifuge tube and mashed with 2 mL n-hexane. After centrifugation (6000 rpm, 10 mins), 600 mL supernatant was transferred to a new 10 mL centrifuge tube and 2 mL 0.5 mol/mL KOH-CH3OH solution and 1.5 mL n-hexane were added. The mixture was reacted at 60°C in a water bath for 2 hours. After cooling to room temperature, 4 mL distilled water was added. After centrifugation (6000 rpm, 10 mins), the supernatant was removed to a 1.5 mL tube for gas chromatography analysis. The composition and content of palmitic acid, oleic acid, linoleic acid and α-linolenic acid were determined by gas chromatography.

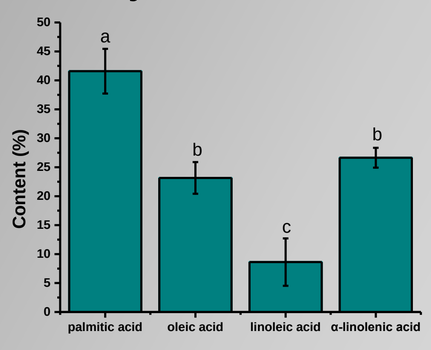
RESULTS



The fatty acids content of *Glyphodes pyloalis*



The fatty acids content of *Spodoptera litura*



The fatty acids content of *Phthonandria atrilineata*

Four fatty acids, palmitic acid, oleic acid, linoleic acid and α-linolenic acid, were found in the pupae of *Glyphodes pyloalis*, *Spodoptera litura* and *Phthonandria atrilineata*. The relative contents of palmitic acid and α-linolenic acid were the dominnant fatty acids, and the content of linoleic acid was the lowest among the three pests.

CONCLUSION

Mulberry pests are rich in fatty acids, in which the content of unsaturated fatty acid, α-linolenic acid, is the highest. In addition, the content of linoleic acid is relatively high. Therefore, Mulberry pests can be a source of unsaturated fatty acids.

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