**Drosophila homogenization for lipid analysis**

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**CONTEXT**

Our research aim is to establish Drosophila as a model for Friedreich's ataxia. This human neurological disorder is produced by the lack of the mitochondrial protein frataxin. Frataxin depletion results in a mitochondrial dysfunction and metabolic problems. We wanted to study weather reduction of frataxin in Drosophila also induced some metabolic responses such as loss of lipid homeostasis.

In this work we have found that ubiquitous and gliatargetted reduction of frataxin expression leads to an increase in fatty acids [1].

**MATERIAL**

- Precesslys®24 homogenizer.
- Precesslys®lysis kit: 03961-1-002 (ceramic beads 2.8mm)
- Sample: Drosophila L3 larvae (15) or Drosophila adult heads (80).
- Buffer: Water.

**PROTOCOL**

- Precesslys®24: 5500 rpm, 2x25 sec, 10s break.
- Centrifugation steps: 5000 rpm - 60s.
- Analysis of lipid content: Samples were delipidated according to Bligh and Dyer, 1959 for thin layer chromatography studies and gas chromatography coupled with mass spectrometry (GC/MS) was carried out after FA methyl ester derivatization according to Ecker et al., 2010.

**RESULTS**

Quality and quantity of extracted lipids from Drosophila samples using Precesslys®24 technology was sufficient on the one hand to have reliable and reproducible results from different biological replica (not illustrated) and on the other hand to observe clear differences between control flies and frataxin-deficient individuals (Figure 1).

![Figure 1: GC/MS analysis of fatty acids from Drosophila L3 larvae (Myristic acid (C14:0), Palmitic acid (C16:0), Palmitoleic acid (C16:1), Oleic acid (C18:1) and Linoleic acid (C18:2)).](image)

Frataxin deficiency increases the amount of each fatty acid.

In conclusion, loss of frataxin affects lipid metabolism and catabolism provoking an accumulation of fatty acids. Moreover, triacylglycerides and other neutral or phospholipids are not so affected.

**CONCLUSION**

Precesslys®24 provided us a complete fly homogenate containing lipid in the right range of both amount and purity, in order to carry out our experiments.

Sample preparation is not only easy but cross contamination free.

For more details, please contact precellys@bertin.fr

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