

Metabolism of mealworms monitored by μ DSC

Introduction:

Mealworms are the larva of the mealworm beetle. The mealworm beetles go through four life-stages: egg, larva, pupa, and adult. Mealworms are food for other animals and are sold at pet stores to feed pet reptiles and birds. Worms like other living organisms generate heat when they move and consume nutrients. These result in heat flow measured by a calorimeter.



Experimental

The Setaram MicroDCS III used in the study is a very sensitive calorimeter which is capable of measuring heat flow above a few microwatts and is well suited for probing metabolism of small animals. Four or one meal worms are placed in the standard stainless steel cell of about 1ml.

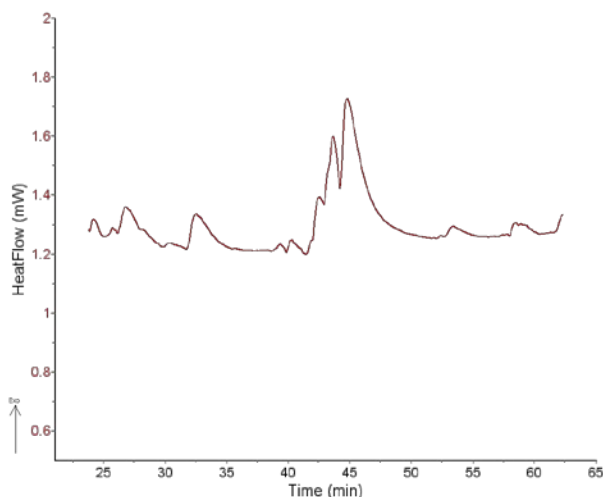


Figure 1

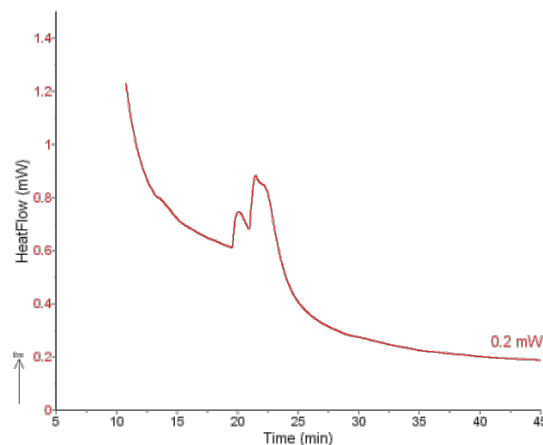
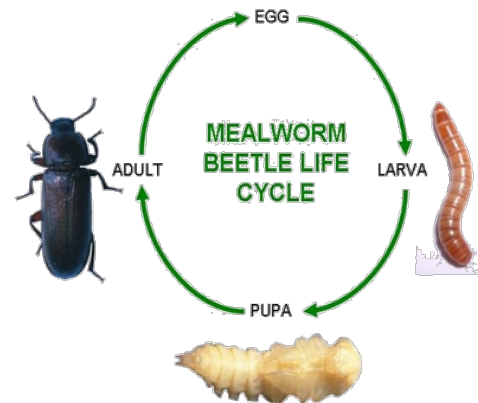


Figure 2

Results

Figure 1 shows the metabolic rate as a near constant level plus peaks, likely due to activity or motion of the mealworms in the vessel. Figure 2, in comparison, shows diminishing activity of the meal worms deprived of oxygen and nutrients as decreasing heat flow which in turn levels off after 2 hours. These two curves clearly show that high sensitivity calorimetry is a very powerful technique to characterize the metabolism of living species in various environmental conditions (atmosphere, pollution, food, light...)

μ DSC3 evo
-20 °C to 120 °C



www.setaram.com
sales@setaram.com

