A Caterpillar That Can Eat Polyethylene: Galleria mellonella

Di Bello, Sabrina (School: Woods Cross High School)

The project's purpose was to demonstrate that Galleria mellonella larvae could feed on polyethylene. The project was conducted at school, where the larvae were kept in 2 plastic boxes (34.6 cm long x 21.0 cm wide x 12.4 cm high), each of which contained 100 larvae. In nature, the larvae live in beehives and feed on beeswax. Their habitat was replicated by keeping the boxes in the dark at a temperature of 25°C and a humidity of 30%. For four weeks, the larvae in the first box were fed polyethylene from a shopping bag, while the larvae in the second box were fed the same type of polyethylene and honeycomb. The amount of plastic was weighed with an analytical balance every week for four weeks. After the first week, holes were found on both shopping bags, as the larvae started eating polyethylene. These holes increased in number during the next two weeks. During the last week of the project, none of the larvae ate polyethylene. In total, the larvae that were fed only polyethylene ate 0.217g of polyethylene and the larvae that were on a co-diet ate only 0.118g. Over the course of the experiment, some larvae entered the pupae state and others died. The ones that were fed on polyethylene stayed small in size, while the others grew bigger. The Galleria mellonella larvae can eat polyethylene, but a polyethylene-based diet is probably not sustainable without supplementing their diet. Further experimentation was done to determine if digestion of the polyethylene was occurring, or if the material was simply shredded.

Awards Won: