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# Experimental study of polystyrene biodegradation by *Tenebrio molitor* y *Zophobas morio*

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The aim of the study was to evaluate the polystyrene biodegradation capacity by *Tenebrio molitor* and *Zophobas morio* larvae. The larvae of each species was divided into three groups (5 larvae per group), one control and two replicas. Each group was cultivated in glass bottle containers, with polystyrene blocks (L × W × H = 4 cm × 4 cm × 1 cm). The experiment was conducted during 15 days and 30 days. The larvae growth and survival was observed every three days, and at the end of day 15th and day 30 the weight loss was measured. *Tenebrio molitor* ingested polystyrene at a rate of 0.14 mg larva$^{-1}$ day$^{-1}$ (15 days), 0.35 mg larva$^{-1}$ day$^{-1}$ (30 days). *Zophobas morio* was capable of eat 1.40 mg larva$^{-1}$ day$^{-1}$ (15 days), 0.93 mg larva$^{-1}$ day$^{-1}$ (30 days) experiments. Polystyrene degradation for *Tenebrio molitor* was 3% and 14% for 15 days and 30 days respectively. The percentage of degradation for *Zophobas morio* was higher, 29% (15 days) and 41 % (30 days). The gut of the organisms was collected at the end of the experiments, and observations at microscope were conducted to identify necrosis tissue and polystyrene presence. Inner tissue of both larvae present damage, thinning of blood vessels, mass loss, and small particles of polystyrene. Microbiota of *Zophobas morio* gut was cultivate to determine microbiome diversity. Both species of larvae were capable of biodegrading polystyrene, with *Zophobas morio* being more effective than *Tenebrio molitor*. The results obtained support the current research, and highlights the need to deepen the study.