The Future of Plastic

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Procedure: Bananas of the same color index were chosen. (greenish yellow bananas were used). Banana peels were removed using a stainless steel knife. A 0.1M sodium metabisulphite solution was prepared using 500ml of water and 19g of sodium metabisulphite. Banana peels were placed into sodium metabisulphite solution for 45 minutes to soak. Banana peels were taken out of sodium metabisulphite solution. Banana peels were placed into a beaker with 500ml of distilled water and boiled for 30 minutes. Water was decanted from the beaker. Banana peels were left out on paper towels to dry. Banana peels were then placed in a blender and blended. Banana paste was poured into a large beaker to be measured. 100ml of banana paste was placed into a separate beaker. Desired amount of hydrochloric acid and glycerol was added to the beaker with 100ml banana paste. 25ml of banana mixture was added to a small beaker. Oven was set to 200F. 25ml of banana mix was placed in a circle on a baking sheet. Banana paste was baked for 2 hours. Samples were air dried Purpose: Banana peel bioplastic is stronger than traditional high-density polyethylene (HDPE). Bioplastic made from organic waste matter serves to recycle food waste and turn it into a useful product such as single use plastic. Banana peels get thrown away so recycling them reduces greenhouse gas emissions (carbon dioxide and methane). Out of the three experiments tested, experiment 1 and 3 held the most mass(500g). In the production of the bioplastic, hydrochloric acid was found to be the controlling factor for the strength of the plastic. A concentration of 0.05M and 3 ml made the strongest bioplastic with no perforations in experiment 3.

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