Development of Biodegradable Potato Starch Based Biopolymers

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Plastic today has become one of the most used materials in the world. From 1950 to 2018, more than 8 million tons of plastics were produced, of which 79% were discarded after use. Plastic products decompose from 500 to 1000 years, while falling into the soil and water, they have a negative impact on all living things.The aim of our project was to obtain material that is not harmful to the environment. The novelty of the project is that non-conforming potatoes (with defects or small ones) were chosen as the source object, as its cost is 2-3 times lower than the cost of ware potatoes. When harvesting and sorting, these potatoes make up 20-30% on farms. The following tasks were set and implemented: Extraction of starch from substandard potatoes; selection empirically by the optimal composition for the production of bioplast; the study of the properties of products from the material obtained; getting organic fertilizer potato peel; the use of fertilizers for growing plants. Studies and economic calculations prove the feasibility of the practical use of potato waste. From 1 kg of non-market potatoes, you can get 9-12% starch, which is 30-40% cheaper than in the store. Bioplast samples are deformed and decomposed in all environments: neutral, acidic, alkaline. Research on growing plants from seeds confirmed that organic fertilizer made from potato peel is a cheap and effective fertilizer.The completed project proves the possibility of using potato starch to obtain biodegradable material. This is one solution to the problem in areas such as food packaging and disposable tableware.

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