HidroQapa: Waterproof Bioplastic Made From Chitosan Extracted From Shrimp Shell Waste

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Several tons of crustacean waste are generated globally due to the mass consumption of seafood such as shrimp, lobster, crab, etc. These are a reservoir of renewable resources such as chitin and derivatives (e.g. chitosan), proteins, calcium carbonate, and pigments. These raw materials that are considered "waste" to the fish industry can be reused to create sustainable and biodegradable products, also reducing waste of resources and pollution of the environment. Shrimp shell chitin is obtained by deproteinization, demineralization, and de-pigmentation processes. Chitosan is obtained by deacetylation of chitin. This is a natural, low toxicity polymer that can be manufactured in the form of films, fibers, sheets, and gels. It also has important biological, physiological and pharmacological properties. In addition, the functional groups of this biopolymer allow its use as a hydrophobic agent. Thus, this project aimed to synthesize a waterproofing bioplastic in the form of a biofilm for fabrics and other materials, made from chitosan extracted from shrimp shell waste, within the Aquaculture and Fish Industry theme. The product will have to be incorporated into the fabric during the manufacturing process, and these fabrics will have to be disposable, such as medical gauzes, due to the high biodegradability of the polymer.

Awards Won:

Fourth Award of $500

Mary Kay Inc.: Second Prize