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Potato cellulose Polymeric Films: Climate Eco-Friendly Waste Alternative to Petroleum-Based Polymers – Eltaboni Fateh - University of Benghazi

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There are several benefits to commonly used synthetic plastics; however, their resistance to biodegradtion has a negative effect on the environment. Therefore, due to growing interest in sustainability and environmental concerns, the use of biodegradable polymeric films will become widespread. Over the past two decades researchers have made great efforts to grow naturally-based ingredients that improve starch texture and nutritional values. Besides its uses in other foods, Starch has other non-food applications, ranging from body care to medicinal applications. Because starch is a renewable and environmentally friendly material, it can serve as a good replacement for fossil-fuel components in many chemical applications, including plastics, detergents, and glues. This research aims at developing edible potato starch film by mixing potato starch (PSS) with sodium starch glycolate (SSG) and silica nanoparticles (SiO2) substantially controls its swelling and mechanical behavior. Potato starch film was prepared using glycerol as a plasticizing agent in aqueous gelatinous solution containing different quantities of SSG with and without SiO2. UV-vis spectroscopic technique was used to investigate the edibility of films in aqueus salt solution pH 7.4 at 25 oC. The rheological and mechanical properties of films have showed the different respenses of the films to SSG content and loading of SiO2. It has been determined that SSG's cross-linking capability plays a critical role in starch's mechanical and rheological properties.

Introduction: In the cutting edge world, reliance on oil based polymers has widely expanded throughout the years. Manufactured polymers like polyethylene (PE), polypropylene (PP), nylon, polyester (PS), polytetrafluoroethylene (PTFE), and epoxy (ordinarily known as plastic) are gotten from oil hydrocarbons. These polymers are an amazingly adaptable gathering of mixes—so flexible, truth be told, they can be found in a wide range of startling spots. Society utilizes engineered polymers in light of the fact that a significant number of them have exceptionally attractive properties, for example, quality, adaptability, resistivity, synthetic inactivity, etc. As of now, Kevlar has numerous applications, going from bike tires and dashing sails to body defensive layer due to its high elasticity. It is likewise used to make present day drumheads that withstand high effect. At the point when utilized as a woven material, it is appropriate for securing lines and other submerged applications. On the opposite side, different difficult issues are examined with respect to the usage of manufactured polymers. Numerous engineered polymers' most alluring element is their substance latency and their protection from different sorts of concoction/organic corruption. This equivalent property, be that as it may, likewise implies they keep going quite a while once they are discarded. For instance, researchers gauge that a solitary plastic sack could take as much as 500 years to separate.

Before, significant intrigue has been in the utilization of engineered polymers for the creation of composites. The utilization of these polymers, be that as it may, presents extraordinary difficulties. These incorporate a deficiency of the natural mixes due to declining oil and gas assets and expanding oil and gas costs. Different impacts incorporate natural worries for their corruption or burning and an Earth-wide temperature boost, uneconomical expenses, and cross-defilements in their reusing, and customer harmfulness dangers. These worries brought forth the mission for materials that can beat these difficulties and keep up the necessary properties for the different applications.

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