

A Review: Fractionation methods of starch components (Amylose and Amylopectin) for industrial applications

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Starch is a natural polymer that can be used in industrial applications to prepare biodegradable artifacts. But these have many drawbacks such as high water absorption, low mechanical strength, and lesser durability. Properties of starch (chemical and physical) and that of the resultant applications are much dependent on the amylose to amylopectin ratio. Recent research studies have focused on fractionation of starch components and modifying the compositions of amylose and amylopectin for specific applications. Formulation of polymer blends with starch and various additives (cross linkers, plasticizers etc.) have led to significant improvements of properties in industrial applications such as plastics and composite material. This review mainly focuses on the recent developments in fractionation of starch using chemical, physical, and enzymatic methods. Of these, the physical and chemical fractionation methods are widely used, whereas enzymatic methods are used for highly specific applications. The main challenges of starch fractionation include high solubility and susceptibility to structural degradation. Recent studies have made significant progress in investigating various solvent mixtures and other process variables in order to overcome these challenges.

Key words: Starch, Starch structure, Amylose, Amylopectin, Starch Fractionation