The starch market in Brazil has been growing and improving in recent years, leading to the search for products with features that meet specific consumer demands. The possibility of introducing new raw starch materials has aroused interest because it would provide a differentiated growth in the worldwide, since in Brazil there are a wide variety of unexplored starch sources. The starch from lobeira (S. lycocarpum) can be cheaply obtained in large quantities, due to the abundance of fruit along the year. In this study lobeira starch was hydrolyzed in a serial reactor containing commercial α-amylase (Aspergillus oryzae) and glucoamylase (Aspergillus niger) immobilized onto glutaraldehyde modified polyaniline (PANIG-amy and PANIG-glu). The best conditions for enzymes immobilization were established using response surface methodology (RSM). The oligosaccharides and glucose produced in the reactor were measured by DNSA and glucose-oxidase assay, followed by TLC analysis. RSM showed that enzyme volume positively influenced amylase (r=0.93) and glucoamylase (r=0.97) immobilization. Maximum PANIG-amy and PANI-glu immobilization were reached reacting 5.0 mg PANIG with 5.5 EU and 3.8 EU, respectively, pH 5.0, for 30 minutes, under orbital stirring. Optimal conditions for lobeira starch hydrolysis were established at pH 4.5 (0.1mol L⁻¹ acetate buffer) and 40°C. TLC of PANIG-amy products revealed the presence of five bands of high molecular weight oligosaccharides. The product obtained in PANIG-glu reactor was predominately glucose (more than 90% conversion). Results of lobeira starch hydrolysis revealed this polysaccharide is very promising for glucose syrup production as well for oligosaccharides with different properties and application.

Keywords: starch hydrolysis, immobilization, serial reactor, lobeira, glucose syrup.