EFFECT OF DEXTRINIZATION USING ACID HYDROLYSIS ON STABILIZATION OF STARCH FROM WASTE TAMARIND (TAMARINDUS INDICA IMLI) SEEDS AGAINST RETROGRADATION ON EXPOSURE TO SUNLIGHT

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ABSTRACT
Starch was extracted from waste tamarind seeds and dextrinized by adding varying amount of hydrochloric acid (HCl). Remoistenable adhesive pastes were prepared from both the native starch and the acid-hydrolyzed dextrins and their functional properties (drying time, gelation time, optical clarity, relative viscosity, and syneresis) were comparatively studied before and after exposure to sunlight for 504 hours (three weeks). The adhesive sample pastes were also applied on a cardboard paper and their peel load values determined before and after outdoor exposure at room temperature according to ASTM D1084 and ASTM D1876 standard methods for 504 hours (three weeks). The results showed that the extent of improvement in the desired adhesive qualities and the deterioration of adhesion properties of the samples were directly dependent on both the extent of the modification (amount of HCl added). The results also showed that while gelation time increased with increase in both amount of HCl and exposure period, syneresis decreased with increase in both amount of HCl and exposure period. While both peel load and light transmittance increased with increase in amount of HCl and decreased with increase in exposure period, both relative viscosity and drying time decreased with increase in amount of HCl and increased with increase in exposure period. Overall, acid hydrolysis has stabilized the adhesives against retrogradation caused by the damaging effect of ultra-violet light portion of the sunlight. Value addition to native starches by various modification methods, such as dextrinization using acid hydrolysis and starch from non-food sources (such as waste tamarind seeds) were strongly recommended to Nigerian adhesives industry so that foreign exchange is saved from importation of the expensive, often toxic, environment unfriendly synthetic adhesives and the additives used in formulating them. The backward integration process can also create job opportunities to our teeming unemployed youths.

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