

Title Modification of hemicellulose polysaccharides during ripening of postharvest banana fruit

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Abstract

Alcohol-insoluble residues (AIRs) from postharvest banana fruits at five ripening stages were extracted and isolated. The AIR was fractionated with 1 M KOH or 4 M KOH to obtain hemicellulose polysaccharides 1 (HC1) and 2 (HC2), respectively, and their content, molecular-mass, monosaccharide composition and glycosidic linkages were evaluated. HC1 yield decreased significantly from 126.95 to 21.14 mg/g on fresh weight basis during fruit ripening, but HC2 yield increased and then decreased. Concomitantly, the molecular-mass of HC1 and HC2 decreased obviously, indicating that depolymerization occurred. Moreover, the major monosaccharide compositions were identified as glucose and xylose. The GC–MS analysis further revealed that HC1 and HC2 had a 1,4-linked glucose backbone. During fruit ripening, the molar percentage of 1,4-linked Glcp residues increased in HC1, but decreased slightly in HC2. Overall, this study indicated that the modification and depolymerization of hemicellulose polysaccharides were responsible for banana fruit softening.