^{13}C-NMR studies on the intermediate material (IM) of starch

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Intermediate material (IM) was hydrolyzed by pullulanase and β-amylase alternatively and then fractionated by GPC on Sephadex G-50. A small peak at the void volume was observed on the elution profile. From the results of molecular weight measurement on the observed material at the void volume by HPLC and analysis by ^{13}C-NMR, it is inferred that the structure of the intermediate material is between amylose and amylopectin. There are only one glucose unit and/or without interval between the branching points on the molecule chain. The number of chains per molecule is less than that of amylopectin, and the length of the branch chains is longer than that of amylopectin so as to have the characteristics of amylose. There are not satisfied methods at present available to separate amylose from intermediate material. That the β-amylolysis value of the amylose can not be as high as 100% is just because of the impurity of amylose with the existence of intermediate material(IM). Therefore, amylose may be defined as linear molecules without any branches.

References:

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