

Publication

Mode of synthesis of long-chain fructan in timothy haplocorm

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The mode responsible for synthesis of long-chain fructans was investigated using haplocorm of timothy (Phleum pratense L.). Homogenate of timothy haplocorm was incubated with ¹⁴C(U)-sucrose at 15 degrees C. A thin-layer chromatography of the reaction mixture confirmed that labeled fructose was incorporated into high molecular weight fructans. A gel chromatogram of the reaction mixture revealed that incorporation of labeled fructose into fraction of high molecular weight fructan was much higher than that incorporated into low molecular weight fructan, implying that direct incorporation of fructose into high molecular weight fructan occurred. The mode of fructose incorporation was further explored by degrading the labeled high molecular weight fructan with exo-hydrolase and measuring the release of labeled fructose. Ninety-seven percent of the labeled fructose was released by cleavage of only about 2% of high molecular weight fructan, suggesting that the incorporation of fructose into a high molecular weight fructan was confined to the end of the chain. The results obtained indicate that polymerization to long-chain fructan occurs by attachment of fructosyl residues to the end of fructan chains.

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