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[\[PDF \(305K\)\]](#) [\[References\]](#)**Diurnal-Nocturnal Changes of Assimilated Starch Structures in Sweetpotato Leaves**Kanefumi Kitahara¹⁾, Takayuki Uchino¹⁾, Ichiyo Okizono¹⁾ and Toshihiko Suganuma¹⁾

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Sweetpotato leaves cultivated for three months were harvested at different times for two days, and starch structures in the leaves were examined. The starch content changed in a circadian rhythm, with the minimum at 05:00 and the maximum at 17:00. The starches in the leaves were extracted by maceration of the leaf debris in hot dimethyl sulfoxide and prepared by selective precipitation by iodine. Gel-permeation chromatography of the leaf starches and amylopectins on Toyopearl HW-75F revealed that the leaf starches had a higher amount of material eluted at a low molecular weight fraction compared to that of its root starch, and the low molecular weight fraction contained both amylose molecules and a large amount of small amylopectin molecules. It was also found that both molecular weight distributions of the leaf starch and amylopectin were shifted to high molecular weight during the daytime and to low molecular weight during the period from sunset to sunrise. After debranching the starches and amylopectins, the chain-length distributions and short-chain distributions were analyzed by high-performance gel-permeation chromatography and high-performance anion-exchange chromatography, respectively. The chain-length distributions of the leaf starches were clearly distinct from those of the root starch. The amylose content of the leaf starches, which was evaluated as the difference in long-chain fraction on chain-length distribution between starch and amylopectin, was low during the daytime, whereas the branch aspect of the leaf amylopectin was relatively constant throughout the whole day. Thus, the structural characteristics of the starch in sweetpotato leaf and their diurnal-nocturnal changes have been revealed.

Key words: leaf starch, sweetpotato, amylose, amylopectin



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