

DATE: Day 29 Month 03 Year 2018

**SUMMARY of
2017 RESEARCH RESULTS REPORT
For International Collaborative Research with IPR, Osaka University**

Research Title		Structural studies of sucrose phosphate synthase from sugarcane by X-Ray Crystallography
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<p>Summary</p> <p>In plant, sucrose occupies many significant roles for plant cell metabolism. Sucrose phosphate synthase (SPS; EC 2.4.1.14) is believed to be the key enzyme for controlling the biosynthesis of sucrose. The knowledge of regulatory function and the crystal structure of plant SPS still remain unclear. In this study, the C-terminus of SPS fused with His-tag and enhanced green fluorescent protein (EGFP) was introduced into insect Sf9 cells. Full-length and N-terminus truncated form (ΔN) SPSs were expressed and purified by successive purification system on column of nickel affinity resin, anion exchange resin, and size exclusion chromatographies. The purified proteins were further crystallized and the initial crystals of ΔN-SPS were obtained in the three different crystallization conditions: (1) 5% (v/v) Tacsimate pH 7.0; 0.1M Hepes pH 7.0, 10% PEG 5,000 MME, (2) 0.2M Lithium citrate basic tetrahydrate pH 8.3; 20% w/v PEG 3,350, and (3) 0.2M Ammonium citrate tribasic pH 7.0; 20% w/v PEG 3,350. With the aim of crystallizing and studying structural basis of plant SPS, it would give an important insight and draw more extensive mechanism of sucrose metabolism. It also will be interesting to determine the regulatory mechanism of plant SPS involved in carbon partitioning that is a critical process for distributing chemical energy converted by plant through photosynthesis.</p>		

***Deadline: May 1, 2018**

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