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## Spatiotemporal Patterns of Starch Deposition in Amaranth Grains (*Amaranthus cruentus* L.)

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### [Abstract]

In this study, we investigated whether there is another amaranth GBSS isoform in an attempt to characterize the synthesis of amylose in the pericarp. We used I2/KI staining to analyze the temporal and spatial starch accumulation patterns during seed development. The spatiotemporal starch accumulation patterns in developing seeds were observed by staining with I2/KI. Starch granules were observed in the pericarp in the initial developmental stage (3 DAP). A few starch granules were detected in the perisperm in the early-late developmental stage (8 DAP), during which the pericarp starch contents rapidly decreased. Starch granules were distributed throughout the perisperm in the mid-late developmental stage (15 DAP). Similar results were reported for other cereal crops, including barley, rice, and sorghum. Starch granules in the pericarp are synthesized during the early seed developmental stages but are absent in mature seeds. We recently reported that starch deposits in the perisperm of developing amaranth seeds are detectable only after the initial developmental stage. Prior to this stage, the pericarp is the major site of starch deposition. A recent study suggested that GBSSII isoforms are responsible for amylose synthesis in pericarps.

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