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Bacteroids Are Stable during Dark-Induced Senescence of Soybean Root Nodules

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Bacteroids Are Stable during Dark-Induced Senescence of Soybean Root Nodules [1,2]

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Physiological and biochemical markers of metabolic competence were assayed in bacteroids isolated from root nodules of control, dark-stressed, and recovered plants of *Glycine max* Merr. cv `Woodworth.' Nitrogenase-dependent acetylene reduction by the whole plant decreased to 8% of control rates after 4 days of dark stress and could not be detected in plants dark stressed for 8 days. However, in bacteroids isolated anaerobically, almost 50% of initial acetylene reduction activity remained after 4 days of dark stress but was totally lost after 8 days of dark stress. Bacteroid acetylene reduction activity recovered faster than whole plant acetylene reduction activity when plants were dark stressed for 8 days and returned to a normal light regimen. Significant changes were not measured in bacteroid respiration, protein content, sodium dodecyl sulfate-polyacrylamide gel electrophoresis protein profiles, or in bacteroid proteolytic activity throughout the experiment. Immunoblots of bacteroid extracts revealed the presence of nitrogenase component II in control, 4-day dark-stressed, and 8-day dark-stressed plants that were allowed to recover under a normal light regimen, but not in 8-day dark-stressed plants. Our data indicate that dark stress does not greatly affect bacteroid metabolism or induce bacteroid senescence.

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