Soluble Sugars, Enzymatic Activities and Gene Expression during Development of Coffee Fruits Submitted to Shade Condition

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SUMMARY

Effects of shade (50% light) condition on development and sugar metabolism was analyzed in fruits of *Coffea arabica* L. var. IAPAR 59. Fresh weight measurements of separated tissues (pericarp, perisperm and endosperm) showed that the increased size observed in beans of shaded plants was correlated with high perisperm development. Reducing sugar contents in the pericarp and endosperm of fruits from shaded plants appeared higher than in the same tissues of control ("full-sun") plants. On the contrary, sucrose content was slightly lower in shade than in control beans. At the enzymatic level, sucrose synthase activities detected in the latest stages (197-231 DAF) of perisperm development from shaded plants were higher than from of control, confirming the importance of this tissue in coffee fruit development. At the molecular level, the *CaSUS1* and *CaSUS2* gene expression was also analyzed in the endosperm from control and shaded fruits. Expression level of *CaSUS2* was higher in mature beans (260 DAF) of shaded plants than in control plants (231 DAF). These results showed that light condition affect sucrose metabolism of coffee beans.