EFFECT OF OVERXPRESSION OF ACETYL COENZYME A SYNTHETASE IN TOBACCO PLANTS

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Acetyl-coenzyme A synthetase (ACS), in plants, is a plastidic enzyme that catalyses the formation of acetyl-coenzyme A (acetyl-CoA) from acetate and coenzyme A using energy from ATP. Traditionally, acetyl-CoA is believed to be the mainly destined for the fatty acid formation. The purpose of this study was to understand the role of the acetyl-CoA in other metabolic routes by determination of metabolic effects of the alterations in its levels, in transgenic tobacco plants (*Nicotiana tabacum* L.) that overexpressed a *Saccharomyces cerevisae* Acetyl-CoA synthetase. The transgenic plants showed an increase in acetyl-CoA synthetase activity as well as in the acetyl-CoA levels. This change was associated with an increase in the amount of fatty acids, cell wall acetylation and carbohydrate, adenylate and uridynate levels. However, there was no change in photosynthesis parameters, in the activity of glycolytic or Krebs cycle enzymes. This result suggests that higher the acetyl-CoA synthetase activity and the higher levels of acetyl-CoA could interfere in the cell wall acetylation, increased the levels of cell wall sugar and fatty acid accompanied by elevated levels of adenylate and uridynate.