Abstract

Availability of nitrogenic compounds in cultivation medium affects metabolism of plants. Plants *Nicotiana tabacum* L., Petit Havana SR1 were grown *in vitro* in Murashige-Skooge agar, with the lack of inorganic nitrogen in medium, with the organic nitrogen as the only source of nitrogen – amino acid glutamine or protein casein. I studied the activity of the enzymes related with the assimilation and metabolism of nitrogen (NR, GS, GOGAT, NAD^+-GDH and $NADP^+$-GDH) and also the enzymes of Hatch-Slack cycle (PEPC, NADP-ME, PPDK). These groups were grown in two varieties with or without the presence of 1,5% saccharose as an additional source of carbon.

Plants stressed by the lack of nitrogenic compounds in medium showed a decrease in activities of all enzymes participating in nitrogenic metabolism and some enzymes of Hatch-Slack cycle (NR, GS, GOGAT, NAD^+-GDH, $NADP^+$-GDH, PEPC, NADP-ME) according to control plants. The only exception was PPDK whose activity slightly increased given the control plants. Casein as the only source of the nitrogen was metabolized, but plants grew slower than the control plants. Activities of all studied enzymes were lower the only exceptions were GS and NADP-ME whose activity increased. The utilization of glutamine by plants increased the activities of NR, PEPC, NADP-ME i PPDK in leaves, however, activity was lower in roots.