Nickel Elicits a Fast Antioxidant Response in *Coffea arabica* Cells

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SUMMARY

The antioxidant responses of *C. arabica* cell suspension cultures to nickel were investigated. Growth was stimulated at 0.05 mM $NiCl_2$, but reduced at 0.5 mM $NiCl_2$. It was detected an increase in lipid peroxidation at 0.5 mM $NiCl_2$. Catalase (CAT), glutathione reductase (GR), ascorbate peroxidase (APX), guaiacol peroxidase (GOPX) and superoxide dismutase (SOD) activities were increased, particularly at earlier $NiCl_2$ exposure times and the activities were higher at 0.5 mM $NiCl_2$ for most of exposure times tested. Non-denaturing PAGE revealed one CAT isoenzyme, nine SOD isoenzymes and four GR isoenzymes. The SOD isoenzymes were differentially affected by $NiCl_2$ treatment and one GR isoenzyme was increased by $NiCl_2$. $NiCl_2$ at 0.05 mM did not induce lipid peroxidation and the main response appeared related with the induction of SOD, CAT, GOPX and APX activities and throught the induction of GR to ensure the availability of reduced glutathione.