

The Influence of Nitric Oxide on Respiration Stimulated by Different Sugars in Potato Tubers Slices Submitted at Salt Stress

Simonin, V¹; Galina, A¹.

¹Instituto de Bioquímica Médica – UFRJ – Rio de Janeiro – Brasil

The salinity of soils has been an agriculture problem but the mechanisms by which intolerant salt plant can respond to this stress are unknown. The nitric oxide (NO) has been viewed as capable of giving the plant a stress adaption. However, few studies have shown the effect of salt stress and NO to plant tissues respiration. Thus, this study aims to evaluate the effect of NO in the potato tuber slice respiration stimulated by sugars (10 mM of glucose or mannose or sucrose or fructose) previously submitted or not to salt stress (NaCl 0,5 M for 24 h). In controls, an increase of 40%, 10%, 27% or 4% in respiration was observed when glucose, mannose, sucrose or fructose were added to respiration medium, respectively. When 100 μ M SNAP (NO donor) was added to the medium, it was observed an inhibition of 77%, 27%, 40% or 90% of respiration stimulated by glucose, mannose, sucrose or fructose, respectively. Under salt stress, the respiration was increased by 5%, 83%, 450% or 150% when adding glucose, mannose, sucrose or fructose, respectively. Under these respiration conditions, SNAP was able to stimulate respiration by 100% or 80% when glucose or mannose, respectively, were in the medium. SNAP caused an inhibition of 25% or 60% when sucrose or fructose, respectively, were in the medium. These data suggest that in normal conditions, NO negatively modulates the respiration induced by sugars, but under salt stress, NO can restore the ability of hexoses induced oxygen consumption only for hexoses that presents high catalytic efficiency for reaction catalyzed by potato tuber mitochondrial hexokinase.

Keywords: *Nitric Oxide, Respiration, Abiotic Stress, Hexoses*
Supported by: FAPERJ and CNPq