

CHARACTERIZATION OF MITOCHONDRIAL UNCOUPLING PROTEIN
ACTIVITY FROM *Vigna unguiculata* HYPOCOTYLS

Garantizado, F.E.A¹, Costa, J.H¹., Cavalcanti, J.H.F¹., Brasilino, A.L.B.S¹. and
Fernandes de Melo, D¹.

¹Departamento de Bioquímica e Biologia Molecular/Universidade Federal do
Ceará, Fortaleza, Brasil

Plant mitochondria contain at least two distinct energy-dissipating systems, uncoupling protein (UCP) and alternative oxidase (AOX), that lead to the same final effect i. e. a decrease in ATP synthesis yield. In a previous work it was identified an *UCP* gene in *V. unguiculata* orthologous to soybean *UCP1a*. The aim of the present work was to characterize polarographically the UCP activity in mitochondria from *V. unguiculata* cv Vita 5 hypocotyls. Mitochondria were isolated from 7-day-old seedlings and the UCP activity was evaluated through O₂ uptake stimulation by free fatty acids in the presence of 100µM propylgallate, 2.5µM oligomycin and 170µM ATP using 13mM malate and 8mM succinate (plus 5µM rotenone) as substrates at different pHs (6.5, 7.2 and 7.8). The uncoupling mediated by UCP was induced by addition of different fatty acids (10µM): linoleic (C18:2), palmitic (C16:0), myristic (C14:0) and lauric (C12:0) acids. Our results showed that UCP activity was not revealed at pH 6.5. Contrarily, pH 6.5 was the optimum for AOX activity. Linoleic acid induced the highest UCP activity in 7.2 and 7.8 pHs for both substrates which was inhibited by BSA. These findings suggest a fine regulation between both energy-dissipating systems in *V. unguiculata*.